

The University of Chicago

THE WHOLESALE PRICE
STRUCTURE FOR ORANGES, WITH
SPECIAL REFERENCE TO THE
CHICAGO AUCTION MARKET

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE SCHOOL OF BUSINESS IN CANDIDACY
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

MARCH, 1943

By
DAVID ALLEN REVZAN

THE UNIVERSITY OF CHICAGO PRESS
STUDIES IN BUSINESS ADMINISTRATION
Vol. XIV, No. 1, 1944

The University of Chicago

THE WHOLESALE PRICE
STRUCTURE FOR ORANGES, WITH
SPECIAL REFERENCE TO THE
CHICAGO AUCTION MARKET

A DISSERTATION SUBMITTED TO THE FACULTY
OF THE SCHOOL OF BUSINESS IN CANDIDACY
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

MARCH, 1943

By
DAVID ALLEN REVZAN

THE UNIVERSITY OF CHICAGO PRESS
STUDIES IN BUSINESS ADMINISTRATION
Vol. XIV, No. 1, 1944

A Supplement to

THE JOURNAL OF BUSINESS OF THE UNIVERSITY OF CHICAGO, January, 1944

STUDIES IN BUSINESS ADMINISTRATION, Vol. XIV, No. 1

THE UNIVERSITY OF CHICAGO PRESS • CHICAGO

Agent: THE CAMBRIDGE UNIVERSITY PRESS • LONDON

COPYRIGHT 1944 BY THE UNIVERSITY OF CHICAGO. ALL RIGHTS RESERVED
PUBLISHED MARCH 1944. COMPOSED AND PRINTED BY THE UNIVERSITY
OF CHICAGO PRESS, CHICAGO, ILLINOIS, U.S.A.



PREFACE

NOTWITHSTANDING such advances as have been made in the collection and dissemination of market news, it is still practically impossible to study price data for many commodities which represent prices actually paid. And, in spite of increased government participation in grading, much of the price data that are available give little indication of variations due to differences in quality. Further inadequacies are to be found in price quotations with respect to other basic factors which affect the value of the commodity. As a result, rather detailed investigations into the nature of the price structures of particular commodities become well-nigh impossible. It is hoped, however, that this study of the price structure for oranges, based upon data of prices actually paid on the auction market, and upon other relevant factors, will prove to be of value because of the definite objective nature of the contribution that can be made to general price-structure analysis.

The absence of any extensive research in this field of price-structure analysis furnished the first incentive to the author for undertaking the present research. This is not to imply that no studies pertaining to price structures have been made; there have been investigations, for example, into the nature of cyclical fluctuations in prices as well as analyses of price spreads between levels of middlemen and of price behavior in general. But it is believed that this study, in its de-

tailed examination of data dealing with one stratum of a cross-sectional picture of the price structure of a particular commodity, will provide a worth-while addition to existing material concerning the nature and complexity of price structures.

Further impetus for this particular study stems from an integrated series of studies of wholesale markets for agricultural products which the author has been privileged to carry on with Professor Edward A. Duddy of the School of Business of the University of Chicago¹ and from the author's interest as a teacher in the structural aspects of marketing.

DAVID A. REVZAN

¹ Those studies dealing particularly with wholesale fruit and vegetable markets are as follows: *The Physical Distribution of Fresh Fruits and Vegetables* ("Studies in Business Administration," Vol. VII, No. 2 [Chicago: University of Chicago Press, January, 1937]); *The Use of Transportation Facilities in the Chicago Fruit and Vegetable Market* ("Studies in Business Administration," Vol. X, No. 4 [Chicago: University of Chicago Press, August, 1940]); "Transportation and Marketing Facilities for Fresh Fruits and Vegetables in Chicago," *Journal of Business*, XII (July, 1939), 280-97; and "The Location of the South Water Wholesale Fruit and Vegetable Market in Chicago," *ibid.*, October, 1939, pp. 386-412, and *ibid.*, XIII (January, 1940), 39-55. Cf. David A. Revzan, "An Analysis of the Operations of the Chicago Auction for Oranges, with Particular Reference to Price and Demand" (unpublished Master's thesis, School of Business, University of Chicago, August, 1935). Two sections of this thesis were published in the *News Bulletin of the School of Business of the University of Chicago* as follows: "Variability of Orange Prices on the Chicago Fruit Auction, 1928-34," II, No. 1 (March 15, 1935), 5-6, and "The Nature of the Demand for Oranges," II, No. 3 (March 13, 1936), 20-22.

TABLE OF CONTENTS

I. THE MEANING OF PRICE STRUCTURE	I
II. THE NATURE OF THE LONG-RUN AUCTION PRICE STRUCTURE	13
III. THE NATURE OF THE SEASONAL PRICE STRUCTURE	27
IV. THE NATURE OF THE SHORT-RUN PRICE STRUCTURE	35
V. THE INTERRELATIONSHIPS OF THE PRICE STRUCTURE AT CHICAGO WITH PRICES IN NINE COMPETING AUCTION MARKETS	47
VI. PROBLEMS IN PRICE-STRUCTURE ANALYSIS	59
APPENDIX: TABLES 8-62	71



Digitized by the Internet Archive
in 2026

https://archive.org/details/IA41533916_0040

CHAPTER I

THE MEANING OF PRICE STRUCTURE

INTRODUCTION

THE detailed analysis of the price structure for oranges on the Chicago market is dependent upon statistical data covering the period 1928-29 to 1940-41. Those series representing averages for the monthly and crop-season periods are incomplete with reference to size distributions and brand premiums except for the 1934-35 to 1938-39 periods. Furthermore, although daily average prices, by varieties of oranges, were available from 1928-29 to 1938-39, it was found that, when these data were tabulated, the most detailed analyses similarly could be made only for the five seasons from 1934-35 to 1938-39. All price data have their origin in the "price-realized" catalogues of the Fruit Auction Sales Company in Chicago. In collecting these price data, however, the author used, in addition to this source, the files of the *Chicago Fruit and Vegetable Reporter* and certain tabulations made available to him by the Chicago offices of the California Fruit Growers Exchange and the Florida Citrus Exchange. Finally, all averages used are weighted averages (unless otherwise indicated), reflecting the volume of sales as the weights.

While these sets of statistical data will furnish the basis for the chapters that follow, the analysis will not be restricted to an interpretation of these data only. The United States Department of Agriculture has published data of average prices at fruit auction markets which make possible a comparison of auction

prices at Chicago with prices at competing auction markets. This intermarket analysis can do little more than consider prices alone, since the data tabulated for the Chicago market have not been tabulated and analyzed in like manner for other markets.¹ Other information collected by governmental and private agencies was utilized in various ways.

In attempting to develop the concept of the auction wholesale price structure for oranges at Chicago and for Chicago in relation to competing auction markets, it has been found necessary, first of all, to develop in detail (in succeeding sections of this chapter) just what is meant by the general concept of price structure. It is necessary, further, to indicate the importance of the auction as a wholesale-price-determining market for oranges at Chicago. To develop these two basic sections and the more detailed material dealing with price structure, both qualitative and quantitative methods of analysis were utilized. In collecting the data, no sampling methods were used for at least two reasons: because it was felt that (1) a census of the data would be more dependable and that (2) a sampling method could not be justified. Changes from season to season in the importance of each producer's or shipper's brand could not readily be dealt with in a sampling season. Furthermore, there is no regularity in the daily distri-

¹ One study in particular should be noted: A. H. Spurlock and Marvin A. Brooker, *Florida Citrus Prices* (University of Florida Agricultural Experiment Station Bulls. 315 and 317 [Gainesville, September and November, 1937]).

bution of the auction sales of these brands; and the changing relative importance of the prominent varieties of oranges by states of shipment has tended to complicate the whole problem of sampling.

In attempting to explain factors associated with price changes, no extensive use of correlation technique was made.² The elimination of correlation analysis does not mean, however, that no attention was paid to factors making for structural change. Such methods (quantitative and qualitative) of analysis, then, as are utilized are intended to accomplish the following purposes: (1) to develop in detail a concrete example of a price structure and to indicate its complex nature; (2) to show the relationships of price structures in competing auction markets; (3) to point out underlying short-term and long-term factors in structural change; and, finally, (4) to relate the orange price structure at Chicago to problems of general price-structure analysis.

THE GENERAL CONCEPT OF PRICE STRUCTURE

It is the purpose of this and succeeding sections of the chapter to indicate the difficulties involved in both general and specific price analyses (see also chap. v). These sections also will attempt to show the value of a restricted investigation of this kind as well as to indicate the highly complex problems of this "segment" type of analysis. In connection with the latter point, some attempt will be made to show that mere averages as representations of particular commodity prices tend to conceal a whole body of material (quantitative and qualitative) that

might, when analyzed in detail, reveal the existence of those systematic relationships which in reality constitute an individual price structure.³

Both inductive and deductive studies of prices may be placed in one of three categories: (1) those which consider individual prices as primarily important and which neglect or subordinate interrelationships with other prices; (2) those which consider individual prices only as a segment of an interrelated system of prices; and (3) those which deal with the relationships of levels of prices to monetary factors.⁴ Regardless of whether this study moves by induction or deduction, it would appear to fall within both the first and the second categories. While it deals for the most part with particular prices, later sections of the work attempt to relate these prices of a particular commodity to those of directly competing products. Further, particular wholesale prices for a single commodity (oranges) within the Chicago market are related to wholesale prices at other competing markets in order to determine the nature of geographical interdependence in the price structure.

Proponents of the individual price approach, if they arrive at all at any con-

³ It is impossible here for the author to argue whether this type of study represents description or analysis, induction or deduction, with reference to economic hypotheses, although this question will be considered in chap. vi. For those who are interested in the question of hypothesis and methodology, two recent works should be consulted: Raymond T. Bye, *Critiques of Research in the Social Sciences*. II. *An Appraisal of Frederick C. Mills' "The Behavior of Prices"* (Social Science Research Council Bull. 45 [New York: Social Science Research Council, 1940]), and J. Marschak, "A Discussion of Methods in Economics," *Journal of Political Economy*, XLIX (June, 1941), 441-48. This article consists of a discussion of some relevant material involved in the first-mentioned study.

² Where such studies were thought necessary for illustrative purposes, recourse was had to those made by other persons.

⁴ See Bye, *op. cit.*, pp. 3-16, for a detailed development of these three categories as well as for illustrations of actual studies.

clusions concerning the existence of a system of prices, do so on the basis of building up such a system as a resultant of the combination of such individual price units (or on the basis, perhaps, that the prices build themselves up). Those, however, who support the contention that a general price system does exist try to show that individual prices, rather than determining such a system, tend to be determined within the environment of a general price system. This study does no more than break ground in the solution of this problem of the nature and complexity of price structures. But, because of the wealth of data, it is hoped that this study may be of value in obtaining answers to such questions of price analysis as (1) the effect of the nature of the product; (2) the effect of product differentiation, particularly the use of brands; (3) the nature of the demand for the product; (4) the variability and flexibility of price movements; (5) the relation of the price system to geographical factors; (6) the relation of the price system to the kind of marketing system employed; (7) the effect of sellers' competition on prices; and (8) the interrelationship of the orange price structure and the general price structure.

THE CONCEPT OF A PRICE STRUCTURE FROM A MARKETING VIEWPOINT

In attempting to describe and analyze economic activities, an effort is generally made to detect the presence or absence of systematic relationships among the relevant factors. Any tendency for the relationships, if systematic, to maintain the same proportionate weights of importance would constitute what might be characterized a "static" pattern. On the other hand, any variability in the interrelationships of the factors, together with the disappearance of some factors

and the introduction of new factors, would constitute a "dynamic" pattern. Thus, any analysis of economic activities should not merely describe a situation but, using both quantitative and qualitative methods, proceed as far as possible toward a point where reasons could be advanced to explain why the situation is what it is.⁵

This idea of the presence of systematic relationships in economic activities is the basis for the author's interest in the structural aspects of marketing.⁶ In stating this approach to the study of marketing, emphasis is placed first on the idea of the marketing system as a system of "organisms" which are the institutional middlemen of the wholesale and retail markets. Based on a hypothesis of systematic relationships, these "organisms" constitute a structural pattern which functions to provide a flow of goods and services from producer to consumer. This functional process constitutes the essence of marketing.⁷

⁵ For an excellent treatment of this question of methodology see Marschak, *op.cit.* Chapter vi below considers some aspects of this problem.

⁶ It should be noticed, however, that, to the extent that random rather than systematic relationships prevail, the search for the underlying "why," while not completely eliminated, becomes ever so much more difficult. Unless the many important factors that can possibly affect prices reduce themselves to some few that represent all in explaining why a situation is present, to that extent the situation may be said to have no systematic underlying relationships.

⁷ The idea of comparing economic with biological organisms needs some elaboration at this point. Human beings as units of the economic organization correspond to the cell, the important structural unit of the biological organism. And human beings, like cells, combine into groups to carry on basic functions. However, important differences exist as well. The division of labor between the parts of the biological organism is predetermined, and the coordination of their activities becomes an automatic and mechanical process. As a result, each cell seems to be unable to choose its position in the organism or

But it must be remembered that the individual organisms operating in structural patterns must do so in terms of an environmental condition. As a corollary of such mode of operation, they are affected by stimuli that may be said to consist, principally, of profits and of the "environment" of the goods and services that will flow from producer to consumer.⁸ Thus, there is an interplay between the organisms as parts of a structure and the goods and services, whereby each becomes modified. It should be noticed also that, while organisms may be added to or subtracted from each structure, the general functioning of the combined organisms continues to effect a flow of goods and services, although the particular activities of each organism may be modified.

The organization of institutional middlemen, then, is modified for each group of commodities and services. This organization (or structure) manifests itself in each such case by three important component parts: (1) the organization and co-ordination of the cells—the wholesale and retail middlemen functioning in

the functions it wishes to perform; it follows that one cannot compete with the other.

Between human beings as units in an organization, however, such a situation does not obtain. In a democratic society each human "cell" in relation to other "cells" can choose his area of activity. This purposive choice of functions to be carried on necessarily brings about the existence of competition. In order to promote the interests of these cells, and of society as a whole, planned provision must be made to utilize in the most co-ordinated way possible the specialized abilities thus displayed. (The author is indebted to Frank H. Knight, professor of economics at the University of Chicago, for the material from which the core of the ideas here expressed was obtained.)

⁸ That is to say, marketing may be visualized from another viewpoint as the creation of place, possession, and time utilities, whereas the creation of form utility constitutes the principal production function. The two, of necessity, overlap, since both affect the nature of the goods and services to be bought and sold.

particular ways in order to market a particular group of commodities or services; (2) a geographical structure—the market area—the resultant of systematic spatial relationships among many factors and within which the flow of goods and services takes place from particular producers to particular consumers; and (3) the structure of exchange values—the price structure—that must be found in a society where barter is practically non-existent.

These three structures, by interaction, are resolved into the marketing structure. The interworkings of prices for production and marketing services, coupled with prices for particular products or services, facilitate the distribution of goods and services, with respect to particular producers located at particular places, within "definite" geographical marketing areas. And these combinations of structural elements react, in turn, on the institutional middlemen by modifying their preferences and, in part, the physical range of their activities.

A price structure, viewed as one part of the marketing structure, may be said to be the resultant of the basic nature of the product involved, the nature of the buying interests for the product in a definite market area, the competitive relations of buyers and sellers in the respective market areas for the product, the competitive relations of the commodity to other commodities, and legal regulation. With respect to the product itself, the following factors would seem to be of major importance: the source of production, the cost of production, the varieties to be marketed, the areas of consumption, methods of branding, methods of packaging, transportation costs to the consuming markets, the uses to which the product is adapted, and the methods of distribution utilized.

A study of the nature of the buying interests would seem to involve the following points: the institutional pattern, such as jobber, chain store, etc.; the size of the buyer; the frequency of purchases; the size of the average order; the bases upon which the buyer purchases, that is, the knowledge used in purchasing, etc.; the nature of the demand for the product; and the requirements of the buyer for particular sizes, varieties, qualities, and quantities of the product.

Competitive relations of one market area to other market areas must be measured principally in terms of comparative prices for similar qualities of products in relation to transportation costs and others affecting cost factors. Further analysis must consider the relative importance of competing sources of supply for the market, the seasonal characteristics of the market's demand, the quantities of goods consumed, and the qualitative aspects of the market's supplies.

Finally, attention must be devoted to the relationships that prevail between the prices of the product and the prices of other products. A study of such relationships as exist must consider, first of all, the comparative prices for the product and such other products as may be considered direct substitutes. Second, the prices for the individual product should be considered in relation to prices for all commodities in general. And any tendency should be noted for the substitution of the particular product, in consumption, for other products.

In appraising all these relevant factors, analysis must be pointed toward discovering the stability or instability of the price movements and toward determining the relative importance of the different factors. The impact of the chronological factor varies, however,

from commodity to commodity. On the one hand, adequate price information may be either not compiled or not available for varying time periods. And, on the other hand, the nature of the market organization may mean that prices may be very sensitive and, accordingly, determined in highly organized markets, and thus vary from hour to hour as well as for longer periods of time. For other commodities wholesale and retail markets may be highly unorganized. As a result, no adequate price data may be available for use.

At the present time the author knows of no published sources which permit much more than a beginning to be made in presenting the complexity of the marketing structure as it exists today in its threefold aspect. This study represents an effort to indicate the complex nature of this organization by focusing attention upon but one commodity in but a single segment of its price structure in one market area. It should be observed, furthermore, that this task deals with only one of the three component elements of the whole marketing organization. Yet, in so restricting the analysis, the author wishes to emphasize again that his principal motive has been to provide additional material pertaining to the nature of price structures.

THE COMPONENT PARTS OF THE AUCTION PRICE STRUCTURE FOR ORANGES AT CHICAGO

The actual trade channel utilized in the marketing of a particular fruit or vegetable is affected by (1) the distance of the producing area from the market; (2) the volume of movement of the commodity; (3) the nature of the commodity; (4) the type of market to be reached; (5) the level of prices and the direction of price change; (6) the actual details of

financing involved; (7) the degree of maintenance of control over the product exercised by the selling organization; and (8) the nature of the buying interests.

In marketing a fruit such as oranges, growers may maintain control over the ownership and sale through a central market, or they may sell the crop to local assemblers and buyers at shipping-points. Again, sale may be made directly to chain-store organizations. If the producer or local shipping interest does not belong to a co-operative shipping association, and does not wish to have title pass at the local shipping-point, the use of agent middlemen may be advisable. Depending on the factors listed above, such arrangements may make use of commission agents, brokers, or other types. At the central wholesale market the selling interests may sell through the auction facilities or otherwise. For each institutional pattern that may be used, there exists a system of prices which constitutes a part of the entire wholesale price structure for oranges.

In the detailed analysis that will compose the remainder of this study, no credit can be claimed for having presented a complete cross-sectional treatment of the price structure of the Chicago market for oranges. Two important gaps are to be noticed: one concerns the price structure for oranges sold by retail middlemen and the other concerns the pattern of prices for oranges sold by wholesale middlemen by methods other than the auction method.⁹ If any explanation is needed for these gaps, three excuses may be offered: (1) the lack, at present, of data for private and retail sales comparable to those available for the auction market; (2) the lack of re-

sources for such a task even if the data were available; and (3) the magnitude of the task involved merely in the gathering of auction data, in their interpretation, and in the preparation of the final report.¹⁰

When the attention of the reader is focused upon a detailed cross-sectional view of the auction price structure for oranges in the Chicago wholesale market, four points of view are apparent. First, the systematic relationships of the factors underlying the price structure have to be related to definite time periods. Following upon this, the auction price structure has to be related to the nature of the buying and selling middlemen involved. Third, and most important, the characteristics of oranges which contribute to the structural elements of auction prices have to be considered. Fourth, the auction price structure at Chicago needs to be compared with similar structures at competing markets.

Some idea of the sensitivity of the price-establishing forces of a market may be obtained from a comparison of prices resulting from the weighted averages for time periods of varying lengths. Where such forces reach a maximum, a high degree of price flexibility accrues; conversely, inflexible prices indicate an incomplete balancing of supply-and-demand factors. Yet, at the same time, the averaging process results in a picture of the extent to which relationships tend to become systematized; that is, the extent to which the same groups of factors continue to maintain their relative im-

¹⁰ Some attention will be paid to the two aspects of the price structure not completely analyzed. The next chapter will deal with the importance of the auction market as one segment of the wholesale market for oranges. From that section it will be apparent that any detailed study of such data available for the auction market will constitute sufficient basis for drawing general conclusions regarding the nature of the entire wholesale price structure.

⁹ These methods will hereafter be referred to collectively as "private sales."

portance in affecting the final outcome. Thus, with the auction company at Chicago operating on a five-day week, it is possible to present all price data in future chapters in terms of five averages: daily, weekly, monthly, crop-seasonal (for a particular variety), and annual.

With such price data available in detail as regards units of time, the nature of the price structure can be partially indicated by certain statistical measurements designed to describe the variability and flexibility of the price fluctuations. Two sets of measures are used for these purposes: (1) those which relate deviations of actual prices from daily, weekly, monthly, or annual averages to those averages and (2) those which attempt to measure the direction and amplitude of change of certain short-term prices. Such measures are valuable, among other things, for indicating the generally competitive nature of the auction as a price-determining market.

From the viewpoint of the institutional middlemen involved, little can be done to identify particular prices with particular interests. While more attention will be paid to the nature of the selling interests and, particularly, to the relation of the co-operative shipping associations to the price structure, the analysis will attempt to show how both buying and selling middlemen fit into the auction method for selling fruit. Additional material will attempt to characterize the selling and purchasing habits of such interests with respect to units of sale and purchase as well as to qualitative and quantitative aspects.¹¹

The most detailed analysis has as its source those characteristics of the orange

crop which operate in varying degree to mold the auction price structure. Many of the basic marketing characteristics of oranges¹² have their origin in botanical considerations which may be classified according to the nature of the area of production involved. Accordingly, oranges from California and Arizona may be grouped into three botanical varieties that affect prices: the *Navels*, available during the months from November through May; the *Valencias*, available from April and May through December; and a *miscellaneous* group composed of several minor varieties, available concurrently with the *Navels*. The *Navel* oranges in turn may represent either the *Washington* or the *Thompson Improved* varieties.

Likewise, oranges from Texas and Florida may be grouped together botanically. Those originating in Florida consist principally of the *Indian River*, *Pineapple*, *Round Orange*, and *Valencia* varieties, all of which are available on markets for various periods from October through June and July. Some six other varieties make up the remainder of the state's shipments to the auction market at Chicago. The *Hamlin*, *Navel*, *Pineapple*, and *Valencia* varieties compose the bulk of the Texas commercial shipments to Chicago during the period from October through April. In addition to the varietal factor for oranges from these two states, prices on the auction often have reference to the nature of the skin of such fruit.¹³

Several other factors relating to the nature of oranges could be isolated from the price data. For both Florida and Texas oranges, prices for lines sold car-

¹¹ The availability to the author of studies made by others and of statistical data collected by the co-operative associations made possible the inclusion of this material in the report.

¹² Satsumas and tangerines are excluded from consideration in this study.

¹³ E.g., the terms "russet" and "golden" refer to the nature of the skin.

ried grade designations corresponding to established United States standards for such fruit. Such designations were also available for California and Arizona fruit; it should be noted, however, that stamping of names such as "Sunkist" and "Red Ball" on the skin of the fruit served as substitutes for government grades. Auction prices for all varieties were available by size of fruit beginning with 1934. For California and Arizona fruit, these sizes referred to the number of fruit contained in a standardized wooden box holding a total of one and three-fifths bushels, or seventy pounds.¹⁴ Florida and Texas fruit reached the market in either standard boxes containing ninety pounds of fruit or, during a few seasons, in plywood "Bruce" boxes containing two bushels, as well as the one and three-fifths bushels in the standard box.¹⁵

Again, the price data were classified from 1934-35 to 1938-39 according to the brands utilized by the shippers. In many cases, particularly for co-operative shipping associations, these became important indicators in addition to grade designations of the quality of the fruit. Other factors relating directly to the nature of oranges are to be observed. For Florida and Texas oranges it is possible to measure to a limited extent the importance of the "color-added" feature as a factor affecting prices realized on the auction. The same brand may reach the market at the same time in both a wrapped and an unwrapped condition.

¹⁴ The sizes thus tabulated were as follows: 64, 80, 96, 100, 126, 150, 176, 200, 220, 252, 288, 324, 344, 360, 392, 420, 442, and 560.

¹⁵ Sizes of Florida oranges packed in standard boxes or their equivalent were 64, 70, 80, 96, 100, 112, 126, 138, 150, 176, 180, 200, 216, 240, 252, 270, 288, 294, 324, 336, 344, 360, 378, 392, 420, and 490. Similarly, the sizes for shipments of Texas oranges were 54, 64, 70, 80, 96, 100, 112, 126, 150, 176, 200, 216, 252, 288, 324, 344, 360, 378, 392, 420, and 448.

In such cases it is possible from the data to indicate the price premium which buyers on the auction may attach to the wrapper. Finally, the price catalogues of the auction indicate the presence of certain proportions of decayed fruit whenever present in a car. It is possible, therefore, to develop some relationships between the presence of decay and price discounts to sellers.

Finally, attention was devoted to relating auction prices at Chicago to similar prices at nine competing auction markets.¹⁶ Such comparisons were made in order to indicate the relation between the general price levels for oranges at these markets to the number of boxes sold on each auction, to indicate the spreads in prices between the principal varieties of oranges sold, and to relate price differences between the markets to differences in the transportation costs.

THE GENERAL NATURE OF THE AUCTION METHOD OF SELLING ORANGES

In the wholesale fruit and vegetable market, oranges are sold either at auction sale or at private sale. A threefold difference in the two methods of sale may be said to exist: (1) different middlemen, (2) different places of sale, and (3) differences in the methods actually used to establish prices.

Generally speaking, auction selling at a terminal wholesale market differs from private sale in the greater use made of the auction by co-operative shipping associations as sellers and in the practice of the auction in restricting the minimum unit of purchase so that small purchasers cannot operate to obtain their requirements directly from the auction. From the viewpoint of facilities and loca-

¹⁶ Baltimore, Boston, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, and St. Louis.

tion, another difference to be found between auction and private sales arises from the fact that the auction company (known as the Fruit Auction Sales Company in Chicago) is a separate corporation organized specifically for the purpose of operating specialized sales facilities, but only as an agent. Private sales, on the other hand, are conducted in the regular establishments of those wholesale middlemen located on the South Water market in Chicago or through the medium of brokers representing shippers and growers. Finally, as the name implies, the auction method of selling oranges involves the use of auctioneers, and the basic idea of sales to highest bidders makes possible a system of open sales in which both offers and acceptances are vocal in nature. Private sales involve, in contrast, negotiations between shippers and growers or their representatives, on the one hand, and buying interests, on the other.

Only a very general picture of the organization of the Fruit Auction Sales Company and the auction in general, its methods of operation, and its place in the marketing of oranges, can be given here.¹⁷ This company was organized in 1928, and from that year until 1933 functioned as an operating unit for its two predecessors, the Chicago Fruit Auction Company and the Independent Fruit Auction Company. Since 1933 all fruit auction sales activities in Chicago

¹⁷ For more detailed treatment see Kelsey B. Gardner, *Terminal Fruit Auctions as Marketing Agencies for Farmers' Cooperatives* (United States Department of Agriculture, Farm Credit Administration Bull. 29 [Washington: Government Printing Office, 1938]); Admer D. Miller and Charles W. Hauck, *American Fruit and Produce Auctions* (United States Department of Agriculture Bull. I, 362 [Washington: Government Printing Office, 1925]); and J. W. Park, *American Fruit and Vegetable Auctions* (United States Department of Agriculture Circ. 250 [Washington: Government Printing Office, 1932]).

have been carried on by the Fruit Auction Sales Company as successor to the two preceding organizations. As will be noticed in more detail later, the stock of this company, with the exception of a few shares, is controlled by trade interests active in the selling and buying of fruits and vegetables. The general purposes of the auction are four in number: (1) to provide the necessary physical facilities for receiving, displaying, and selling such fruits as are handled; (2) to provide the necessary trained salesmen—the auctioneers—actually to conduct the sale of the fruit; (3) to provide such clerks as are necessary to keep records of sales, to bill purchasers, etc.; and (4) to arrange for financial terms with the buying and selling interests.

EVIDENCES OF THE FRUIT AUCTION SALES COMPANY'S IMPORTANCE AS A PRICE-DETERMINING MARKET FOR ORANGES

The volume of oranges sold.—Since oranges originating in California move to market in two separate seasons,¹⁸ and since Florida and Texas oranges are available from October through July, some difficulty was experienced in so tabulating the auction sales of these oranges that any meaningful analysis would result. It was decided, finally, to use the calendar year as the basis for analyzing the auction sales data for all oranges but to preserve the crop season as the basis for most of the price-structure analysis for particular varieties.

The composition of the annual auction sales of oranges at Chicago is revealed in Tables 8 and 9.¹⁹ Although total sales of all varieties ranged from 1,749,261 boxes

¹⁸ November through May for Navels and the miscellaneous varieties and May through December for Valencias.

¹⁹ Tables 8–62 appear in the Appendix.

in 1937 to a peak of 2,685,818 boxes in 1929, with a downward trend apparent during those years, sales have subsequently increased, reaching the 1928 level in 1939 and 1940. This decline in total auction sales is accounted for by declines in the sales of both California Navels and California Valencias. The decline for the former was from a peak of 1,199,271 boxes in 1929 to a low point of 539,092 boxes in 1937, or a decrease of more than 50 per cent. While California Valencias declined from a peak of 1,168,839 boxes in 1929 to a low point of 646,457 boxes in 1937, they have nevertheless surpassed Navels in importance in every year since 1931 except 1934. On a relative basis, however, Valencias have shown much less tendency to decline than Navels. The proportion of the former in relation to total sales varied from 35.89 to 46.02 per cent with the peak in 1935 and the low point in 1934. On the other hand, the percentage of Navels varied from a low of 26.64 in 1939 to a high of 47.81 in 1928. The tendency, further, has been for Valencias to move inversely to Navels on a percentage basis.

Sharp increases, both on an absolute and on a relative basis, characterize auction sales of Florida oranges. From sales of 226,981 boxes in 1928, the volume moved steadily to a peak of 678,187 boxes in 1939. As a proportion of total sales, Florida oranges accounted for 11.55 per cent of the 1928 volume and 32.88 per cent of the 1939 volume, or nearly three times as large a percentage. Sales in 1940, however, slumped to 354,863 boxes, or 17.24 per cent of the total, owing to a decline in the state's total production. Furthermore, auction sales of Florida oranges exceeded sales of California Navels for the first time in 1938 and repeated in 1939.

Other supplies of oranges originate in California, Texas, and other states. The supply of miscellaneous varieties of oranges from California is highly variable, ranging from 419 to 46,477 boxes during the period studied, or from 0.02 to 2.36 per cent of the total auction sales. Oranges from Texas have increased in importance on the auction, accounting for around 3 per cent of recent auction sales.

The composition of the total orange supply of the Chicago market by states of origin from 1924 to 1940 is indicated in Table 10. A comparison of Table 9 with Table 10 will show clearly that California oranges are a relatively more important part of the auction supply than of the supply of oranges for the entire Chicago market. Between 1928 and 1940, California oranges accounted for from 63.40 to 88.42 per cent of the auction's sales but for from 54.46 to 83.95 per cent of the market's total supply. On the other hand, the relative importance of California as a supply source for the entire market was maintained without much change from 1924 to 1935 before declining to a low of 54.46 per cent in 1939. This was in direct contrast to the trend of the state's importance as an auction supply source.²⁰

On the other hand, Florida is more important as a supply source for the market as a whole than for the auction. Oranges from this state accounted for only 11.55 to 32.88 per cent of the total auction sales but for 13.90 to 42.09 per cent of the market's total supplies. While the state was increasing steadily as a supply source for the auction market between 1928 and 1939, it showed no such ten-

²⁰ Despite the decline in the importance of the auction, this market has tended to maintain its position as a price-determining institution. Prices realized at private sales tend to follow closely the course of the prices realized at the auction (see Gardner, *op. cit.*, pp. 38-47).

dency for the market as a whole until 1935.

Finally, a comparison of Table 8 with Table 10 should reveal the important fact that the trend of the auction sales in number of boxes has been the reverse of the trend of total supplies received at the market. While auction sales declined steadily from a peak in 1929 to a low point in 1937, total receipts at the Chicago market were increasing for the same period from a low of 2,133,770 boxes in 1931 to a peak of 3,033,712 boxes in 1939.

When the data of auction sales in Table 8 are stated as a percentage of the total supplies tabulated in Table 10, it is possible to indicate what proportions of the supplies of California and Florida received at Chicago are sold on the auction (Table 11). Although the proportion of California oranges so sold declined from 96.6 per cent in 1928 to 71.3 per cent in 1933, the tendency has since been reversed to some extent, with the percentages fluctuating from 70.2 to 82.9. Apparently, the power of the chain stores to account for a larger share of the oranges not sold on auction reached its peak for California oranges by 1933.²¹ On the other hand, the proportion of Florida oranges sold on the auction declined from a peak of 90.9 per cent in 1930 to a low of 53.1 per cent in 1939 and 1940. Because of the inability of co-operatives to control as large a proportion of Florida as of California oranges, it would appear that chain stores were able to buy much larger proportions of the former crop on an f.o.b. basis than of the latter. The tendency for all oranges sold at auction has been for the proportion of the market's supply to decline from a peak

of 93.7 per cent in 1929 to 70.9 per cent in 1933; since 1933 the decline has been much more gradual, with the proportions sold on the auction varying from 66.0 to 73.0 per cent.²²

The nature of the selling interest on the auction.—Shippers or producers selling oranges on the auction may be the producer himself, co-operative shipping associations, independent dealers, various private marketing agencies, or terminal market merchant middlemen. These varied selling interests use either their own salaried representatives or auction receivers and brokers to represent them on the auction. Carlot dealers and speculators may also sell on the auction.

The overwhelming importance of two co-operatives—the California Fruit Growers Exchange and the Florida Citrus Exchange—as sellers of oranges on the auction at Chicago is indicated by data furnished by their Chicago offices (see Table 12). From this table it can be seen that practically all the California oranges sold on the auction—89.96 to 97.60 per cent—are controlled by the "Sunkist" co-operative. Some variation in the degree of control is apparent for the two important varieties; the percentage of Navel sales accounted for ranged from 85.37 to 98.14 compared with 94.21 to 98.54 per cent for Valencias. Two reasons may be advanced for the high degree of control of the "Sunkist" co-operative: the large proportion of the total California crop accounted for by that organization and the practice of corporate chains in buying their orange requirements on an f.o.b. shipping-point basis.

The failure of the Florida Citrus Ex-

²¹ The reason for this may be the practice of California co-operatives (other than the California Fruit Growers Exchange) to sell to chains on the basis of f.o.b. prices related to current auction prices.

²² It may be interesting to point out that records of the Fruit Auction Sales Company indicate that oranges have accounted for 32.8 to 39.7 per cent of all cars of fruit sold at auction between 1930 and 1940.

change to control such large proportions as the "Sunkist" co-operative, as is indicated by the same table, is due to the fact that this co-operative rarely controls much over 25 per cent of the Florida crop. Since 1932-33 this co-operative has failed to control as much as one-half of the auction sales of all Florida oranges. The indications are that slightly more than one-third of such supplies in recent years bore the brands of members of the Florida Citrus Exchange. Because of the smaller proportion of the auction sales controlled by this co-operative, it will be apparent from later sections that no such regularity of marketing of Florida oranges can be accomplished as in the case of California oranges.

Five reasons have been advanced to explain the willingness of co-operatives to sell by the auction method whenever such method is available at a terminal market: (1) the concentration of buying power representing a variety of interests; (2) the speed with which large quantities of fruits can be sold at satisfactory prices; (3) the prompt payment for fruit sales by the auction company; (4) the assumption of credit risk by the auction company; and (5) a financial interest in the auction company.²³ The establishment of a satisfactory price level for the co-operative's oranges at an auction is a necessary part of the distribution plan of the organization. By so establishing these price levels, they tend to serve as "controls" on the distribution of oranges to carlot consuming markets in the area surrounding the auction. In other words, the price level at the auction acts as a force of gravity to make prices at all

other important nonauction markets keep in adjustment with it.

The financial stake of selling interests in the Fruit Auction Sales Company of Chicago is indicated by the following breakdown of the ownership of the company's thirty thousand shares of common stock: buyers and affiliated groups, 51 per cent; shipping interests, 22 per cent; auction receivers, 18 per cent; present and former auction employees, 7 per cent; former buyers and affiliated interests, 1 per cent; and nontrade interests, 1 per cent.²⁴

The nature of the buying interests on the auction.—No large-scale buying interests on the auction exist to match the importance of the two co-operatives as discussed above. A check made of the billings of the auction company during four weekly periods for 1934-35 indicated the following percentage breakdown of buyers at Chicago: jobbers, 79.5; chain stores, 4.4; buying brokers, 0.3; motor-truck jobbers, 11.7; independent retail stores, 3.8; peddlers and pushcarts, 0.1; and a miscellaneous group, 0.2.²⁵ By comparing this breakdown with the distribution at ten auction markets, it was observed that chain stores, buying brokers, and specialty fruit stores were much less important as buyers at Chicago, whereas motor-truck jobbers were of much greater importance.

A comparison of the unit purchases of these buyers for a typical week in 1935 is tabulated in Table 13. It will be noticed that buyers of both California and Florida oranges represented many different levels of buying requirements according to quantity, ranging much larger for the

²³ Nephthune Fogelberg and A. W. McKay, *The Citrus Industry and the California Fruit Growers Exchange System* (United States Department of Agriculture, Farm Credit Administration Circ. C-221 [Washington: Government Printing Office, June, 1940]), pp. 62-63.

²⁴ Gardner, *op. cit.*, p. 73. A check with Mr. Perry Stern, general manager of the auction company, reveals that there has been no significant change in this distribution since the above study was made.

²⁵ *Ibid.*, p. 49.

former than for the latter. While the number of buyers of California oranges amounted to but seven more than for Florida oranges, it will be seen that their average purchases were more than double the number of boxes purchased by

the Florida orange buyers for the period studied.

The financial stake of the buyers in the common stock of the Fruit Auction Sales Company has already been mentioned.

CHAPTER II

THE NATURE OF THE LONG-RUN AUCTION PRICE STRUCTURE

IN DEVELOPING the concept of the existence of systematic relationships between orange prices on the auction market, three time periods need to be considered: the long-run price structure based upon averages of prices for the crop season and the calendar year; the intermediate price structure based upon average monthly prices; and the short-run price structure based upon day-to-day and weekly price movements. This chapter concerns itself with the presentation and analysis of material descriptive of the long-run price structure.

The data needed to develop a cross-sectional view of the long-run price structure cover the crop seasons from 1928-29 to 1940-41 for varieties of oranges from California, Florida, and Texas.¹ In order adequately to present these data, it was found necessary, therefore, to divide the subsequent discussion into seven component parts. The first section develops the composite structure for all oranges regardless of state of origin or variety. This is followed by five sections in which detailed analyses are presented of the data dealing with the oranges from California and Florida by

principal varieties. The final section represents an analysis of the long-run price structure in terms of the interrelationships that exist between the structures for the California and the Florida fruit.

Several elements are represented in the long-run structure as it is developed in the seven sections that follow. The importance of the state of origin of the oranges and of the botanical variety has been indicated. All price data, furthermore, are related to the number of boxes of oranges sold, so that all averages of prices represent weighted averages. Structural elements other than state of origin, botanical variety, and volume of sales are to be found in the grade of the fruit sold, in the number of oranges contained in a box (size of fruit), in the nature of the container used for shipping the fruit, in the comparative prices realized by the California Fruit Growers Exchange and the Florida Citrus Exchange and their respective competitors, and, finally, in the intervarietal comparisons of prices in terms of the preceding factors.

THE COMPOSITE PRICE STRUCTURE FOR ALL VARIETIES OF ORANGES

Two aspects of the long-run price structure, in their relation to a composite picture, have been indicated in the ma-

¹ The movement from Texas has been unimportant, however, until the last three seasons. As a result, no attempt is made to develop a long-run price structure for oranges from that state.

terial for chapter i. There the importance of the states of origin was discussed together with the shifts that have taken place in the proportion of the market's total orange supplies sold on the auction. In addition, the importance of the California Fruit Growers Exchange and the Florida Citrus Exchange as sellers on the auction was made clear by establishing the ratios of fruit under their control to the total orange sales of the auction. Accordingly, this section will not repeat the analysis already made of those aspects of the long-run price structure.

Because of differences in the crop seasons for the different varieties of oranges by states of origin, the seasons had to be ignored and all data considered on the basis of the calendar year in order to present the composite price structure. It should be remembered that, unless otherwise indicated, all prices represent weighted averages with the number of boxes sold as the weights and that, unless otherwise indicated, all data of sales refer to those sales in terms of a standard box containing one and three-fifths bushels of oranges.²

The value of the fruit sold.—The total value of oranges sold by the Fruit Auction Sales Company annually, between 1928 and 1940, ranged from as little as \$5,040,070 in 1933 to as much as \$11,-

663,068 in 1930 (Table 14). Of the total value, California Valencias accounted for the greatest amount, with 43.36 to 49.28 per cent of the total. California Navels ranked second in importance, contributing from 26.24 to 44.51 per cent of the total value, whereas Florida oranges of all varieties ranged in values amounting to 8.52 to 27.43 per cent. Although little or no change has taken place in the relative importance of the value of the California Valencias, the trend for Navels from the same state has been sharply downward. This decline for Navels is offset by the increase in the relative value of all Florida oranges.

The changes in the relative importance of these groups of oranges in relation to auction sales have been outlined in chapter i. There it was pointed out that the decline in the importance of the supplies of Navels was offset by the increased importance of Florida oranges. When the relative importance of these oranges as supply sources for the auction is compared with the relative importance of their auction-realized values, some interesting contrasts are apparent (see Tables 9 and 14). In the first place, it is apparent that Navels account for a larger share of the auction's supplies than of its dollar volume of orange sales. The tendency, however, has been for these two measures to move closer together. Second, California Valencias account for a much higher percentage of the value of sales than of the volume of sales. And, finally, Florida oranges show much the same tendency as the Navels for the relative importance of volume of sales to exceed the importance of the value of such sales. These tendencies indicate definitely that California Valencias realize prices above those paid for either Navel or Florida oranges.

It is evident from Figure 1 that the

² For three seasons, 1935-36 to 1937-38, both Florida and Texas oranges were shipped in both one-and-three-fifths- and two-bushel containers. To facilitate comparative analysis, the conversion of the larger container—the so-called "Bruce" box—into standard containers was made by the addition of 25 per cent to the number of boxes involved, except that, for analysis of the data by size of fruit, the conversion was made on the basis of the count of the fruit contained in such boxes. Since 1937-38 the Bruce box has been reduced to standard size. The trade interests, however, seem to differentiate in price between them and the "regular" standard box. Part of this differentiation is due to the fact that the Bruce box is constructed without the center partition common to the other.

volume of auction sales is somewhat inversely related to the total value of sales from year to year despite the fact that the long-time tendency for both series has been downward. This inverse relationship from year to year has prevailed for seven of the thirteen years for which data have been collected. It should be observed, also, that the rate of change for value of sales between high year and low year greatly exceeds the rate of change in volume of sales.

The unit values per box.—The relationship between the total number of boxes sold and the total value realized yields the average price of each box for each year (Table 60). These prices fluctuated between \$2.60 and \$5.93 for the thirteen-year period, with the upper limit being reached in 1928 and the lower limit in 1938. With the rapid shrinkage in urban consumer incomes from 1930 to 1933, orange prices declined by more than 50 per cent. The recovery in business conditions between 1933 and 1937 correspondingly caused prices to increase by more than 40 per cent from the 1933 level. A tremendous expansion in the volume of fruit sold between 1937 and 1938 was in part responsible for prices reaching their lowest levels at that time. Since this low point, prices have once more begun to rise, passing the \$3.00 level in 1940.

Prices per box are also inversely related to the volume of auction sales (Fig. 1), although again the long-time tendency has been downward for both. This inverse relation has prevailed for all but five of the years for which data were collected. A later chapter will deal in more detail with the factors affecting these prices.

Other structural factors.—With respect to four other factors affecting the structural aspects of auction prices over the

long run, little can be done to explain their nature with respect to the composite structure. Information pertaining to the grade of fruit sold on the auction is available for both California and Florida oranges, but the systems of grades used in the two states are dissimilar. It was

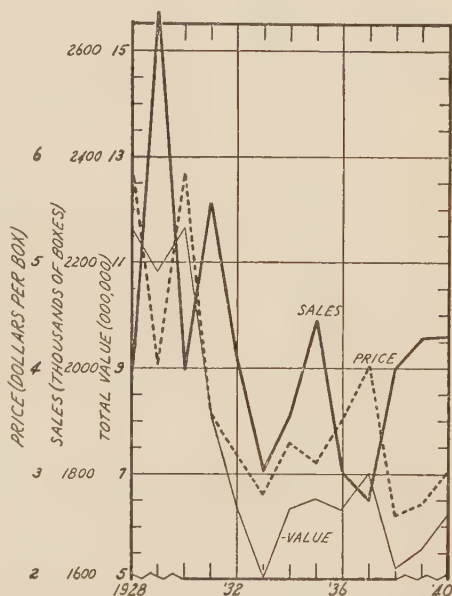


FIG. 1.—Annual auction sales, values, and prices of all oranges at Chicago, 1928–30.

felt, therefore, that better use could be made of this information for intervarietal comparison than by attempting to combine both systems of grades into a composite picture.

Similarly, data are available for recent seasons showing the distribution of auction sales and prices of each variety of fruit according to its size. But, as was the case for grades, Florida and Texas oranges are packed according to a different series of sizes as compared with California oranges. Consequently, because of these dissimilarities, it was felt that intervarietal comparisons would yield more valuable results than any distribution on a composite basis.

Only Florida and Texas oranges utilized two sizes of shipping containers; further, the use of the Bruce plywood box of standard size, but with no center partition, was likewise restricted to these states. No value could be gained, therefore, from introducing these differences into the composite long-run analysis. The analysis, then, of these containers and their effects upon auction prices is

THE LONG-RUN PRICE STRUCTURE FOR CALIFORNIA NAVEL ORANGES

The normal season for California Navels, in so far as sales on the Chicago auction are concerned, extends from November of one year through the following May or June, depending upon the volume of fruit to be marketed and the nature of market conditions. Accordingly, all data used to sketch the nature of the long-run price structure are averages of the data for these months unless otherwise indicated. Previous sections have dealt with the importance of the volume of sales of Navels and of the auction value of such sales. This material, therefore, will not be repeated in this section.

The trend of average prices.—Figure 2 indicates the course of average crop-season prices for Navels from 1928-29 to 1940-41. In addition, Figure 2 shows the course of volume of sales and of the total value of the volume of sales for each of these seasons. The low point in prices, \$2.67 per box for the 1936-37 season, represented less than 50 per cent of the average price of \$5.79 for which Navels sold during the 1929-30 season. Since 1932-33, however, the general course of Navel prices has been toward a much more stable situation, with no change in level being apparent and with the range of fluctuations narrowed between \$2.67 and \$3.78. If the year 1936-37 is eliminated, the highest price realized in this period is reduced to \$3.23. The price trend is different from the movement of both auction sales of Navels and the total value of such sales. Generally, prices per box move inversely to the volume of auction sales. But the rates of change are greatly varied for the two series, and, as a result, the total value of the Navels sold on the auction has shown

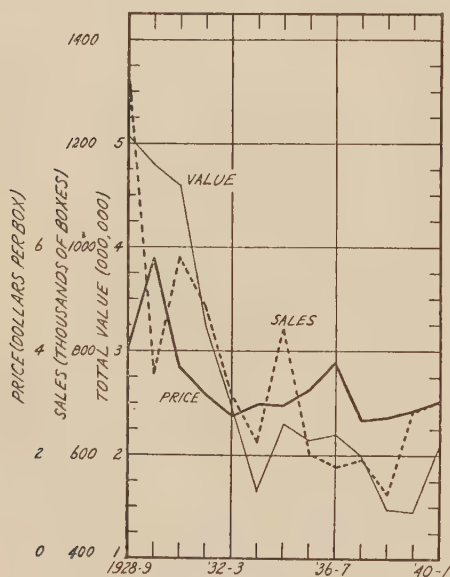


FIG. 2.—Total auction sales, values, and prices of California Navels at Chicago, 1928-29 to 1940-41.

left for the section dealing specifically with Florida oranges.

Finally, data are available to express the differences in prices realized on the auction by the largest California and the largest Florida co-operative shipping organizations in relation to their competitors. Once again the analysis of these data are better handled in the appropriate varietal sections and in the section dealing with intervarietal comparisons than in this section.

far greater percentage changes than either the volume of sales or the unit prices.

The grade of the Navel oranges sold on the auction.—California oranges of all varieties that are sold on the Chicago auction are graded either as U.S. No. 1 or U.S. No. 2 fruit.³ The proportion of the auction sales of Navels represented by each of these grades for the seasons from 1932-33 to 1939-40 are shown in Table 15. Although first grade is far and away the most important, its proportion of the total has fluctuated widely from 71.17 per cent in 1936-37 to 92.43 per cent for the following season.

The relation of grade to price is shown in Table 15 and Figure 3. Two tendencies should be noticed. First, whereas the price paid for the first grade is, as expected, higher than that for the second grade, this tendency did not hold true for the season of 1936-37. In that season, with the proportion of second-grade fruit at its peak, and when one would expect the premium for first-grade fruit accordingly to be at a peak, the price for second-grade oranges actually exceeded the price for first-grade fruit. Why this should be so is not discernible from the information at hand. Second, whereas the premium realized by first-grade over second-grade oranges fluctuated from —5 cents to 42 cents a box for the eight seasons, the tendency has been, generally, for the size of the premium to vary directly with the proportion of the first-

grade fruit. Only between 1933-34 and 1934-35 and from 1937-38 to 1939-40 is this tendency reversed. It should be observed also that the size of the premium seems to vary inversely with the level of the prices.

Price in relation to size.—Data were compiled for six seasons, 1933-34 to 1938-39, to show the distribution of auction sales and prices of California Navels

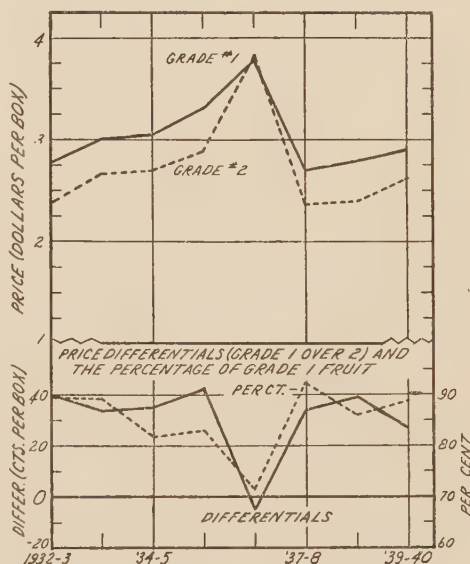


FIG. 3.—California Navel prices at Chicago, by grade, 1932-33 to 1939-40.

according to the number of oranges packed in the standard one-and-three-fifths bushel box.⁴ For these seasons there were eighteen separate sizes sold, ranging from 48 to 442 oranges per box, although several of these were of minor importance (Table 16). The distribution of sales according to size varies sharply from year to year according to the average size of the fruit. For the six seasons the average size of all Navels ranged

³ These grades are the equivalents, respectively, of the "Sunkist" and "Red Ball" trade-marks of the California Fruit Growers Exchange (see Nephthune Fogelberg and A. W. McKay, *The Citrus Industry and the California Fruit Growers Exchange System* [United States Department of Agriculture, Farm Credit Administration Circ. C-221 (Washington: Government Printing Office, June, 1940)], pp. 104-9).

⁴ The data for the 1933-34 season represent an averaging of the January through June months only.

from as few as 162 to the box in 1934-35 to 206.6 in 1938-39. Obviously, average prices from year to year must take into account the variable number of oranges per box. If large Navels are defined as those of size 200 or fewer per box, we find that, whereas 84.46 per cent of all auction sales in 1934-35 were of this category, only 56.74 per cent of the Navels sold in 1938-39 were in the same classification.

The variability in the sizes available is reflected in the prices paid for each size. If we ignore those sizes which accounted for less than 1 per cent of the total auction sales, it is found that for four of the six seasons the 200 size commanded the highest prices; in 1934-35 the premium size was the 252, and in 1938-39, the 100. Likewise, from 1933-34 to 1935-37, those important sizes commanding prices higher than the average for all sizes ranged from 176 to the box to as many as 344 in 1934-35 and to 252 in 1935-36. For the last two seasons the five sizes from 100 to 200 have realized the premiums. Only in the 1935-36 season have fewer than five of the important sizes obtained premiums from wholesale purchasers.

One point of importance about the size premiums concerns the difference between the buying habits of the ultimate consumer and the retail and wholesale middlemen. Generally, the ultimate consumer buys in terms of dozen lots of oranges or multiples or fractions of that unit. Accordingly, his reaction is to reduce the price paid per dozen as the size is reduced. On the other hand, the basic sales unit to wholesale and retail middlemen is the standard box. If the auction prices for these boxes were converted to a per-dozen basis, it would be found that a positive relationship exists between price and size to the extent that the smaller sizes command the highest

prices, and vice versa. But this progression is not exactly proportionate to the rate of increase in the number of fruit per box, partially because of the predominance of certain sizes and the willingness of buying interests to pay premiums for these sizes in order to have a sufficient volume of oranges to sell.

TABLE 1*

PRICES REALIZED BY THE CALIFORNIA FRUIT GROWERS EXCHANGE AND COMPETITORS FOR NAVELS SOLD ON THE AUCTION, 1931-32 TO 1939-40

Crop Season (Nov.-Oct.)	California Fruit Growers Exchange Price	Competi- tors' Price	Differential in Favor of California Fruit Growers Exchange
1931-32.....	\$3.13	\$3.01	\$0.12
1932-33.....	2.74	2.48	.26
1933-34.....	2.98	2.78	.20
1934-35.....	2.99	2.81	.18
1935-36.....	3.25	3.04	.21
1936-37.....	3.80	3.63	.17
1937-38.....	2.68	2.54	.14
1938-39.....	2.73	2.57	.16
1939-40.....	2.87	2.39	0.48

* Source: California Fruit Growers Exchange (Chicago office).

Prices realized by the California Fruit Growers Exchange and its competitors.—Data are available comparing prices realized by the "Sunkist" co-operative with those received by all its competitors (Table 1). It has been indicated elsewhere that this co-operative controls from 85 to 98 per cent of all Navels sold on the Chicago auction (Table 12). This control reflects itself in a price advantage which has ranged from 14 to 48 cents per box since 1931-32. The differential costs of operation reflect themselves in part in this differential.⁵ The price advantage of

⁵ E.g., in 1937-38 the selling and advertising costs for Navels sold by this co-operative averaged 13 cent per box (see Fogelberg and McKay, *op. cit.*, p. 77).

the California Fruit Growers Exchange reached its low point in 1931-32 and its peak during 1939-40. The importance of these differentials for the price structure as a whole is to reveal the influence exercised upon a general price level by the functions of a particular type of wholesale middleman.

There is some evidence of an inverse relation between the size of this differential and the proportion of the total auction sales of Navels accounted for by the Exchange's competitors (see Table 12). For the 1932-33 season only 2.94 per cent of the auction sales of Navels came from such competitors; as a result, the differential rose 14 cents over the preceding year, when the competitors controlled 14.63 per cent. Again, during 1939-40, the differential of 48 cents was associated with competitors' supplies amounting to only 1.86 per cent, the lowest proportion for the nine seasons for which data were compiled.

This inverse tendency holds true also when the amount of the price differential is related to the absolute number of boxes sold by the competitors. The abnormally high spread in 1939-40 appeared to be due to the following factors: (1) that the volume of competitors' sales was the lowest for the nine seasons; (2) that the proportion of second-grade fruit sold by the competitors was the highest in relation to their total sales; and (3) that the prices realized by competitors for second-grade fruit were 2 cents per box higher than for first-grade Navels.

THE LONG-RUN PRICE STRUCTURE FOR CALIFORNIA VALENCIA ORANGES

The sale of Valencia oranges from California (including Arizona) usually takes place on the Chicago auction from May

through December. For the years 1928, 1930, 1932, 1938, and 1940, however, sales took place as early as April; while in 1928, 1934, and 1938, small amounts of Valencias were sold in March. Although the Valencia season has closed in December for six of the thirteen seasons for which data were tabulated, the season has ended as early as November for five seasons and as late as January and February for 1934 and 1940, respectively.

The trend of average prices.—The average crop-season auction prices of Valencias has ranged from a peak of \$7.08 per box during the 1928 season to a low point of \$2.94 per box in 1938 (Table 61). Although this low price was but slightly more than 40 per cent of the peak, it should be noticed that most of the downward movement in price took place from 1928 to 1931. Since 1932, prices have fluctuated between \$2.94 and \$4.97. Despite the tendency for the dollar volume of sales to follow the trend of prices, the year-to-year relationship of the two series is inverse generally, although the rate of decline of sales has been much less than for prices. As a result of these diverging rates of movement, the decline in the total value of Valencias sold on the auction has been much less than the decline for prices per box.

The grade of Valencias sold on the auction.—The same set of grades indicated for California Navels apply also to California Valencias. But the proportion of second-grade fruit for Valencias is both higher and more variable than for Navels (Table 17). It should be observed here that the proportion of such fruit marketed during any particular season may be the result of (1) the absolute size of the crop; (2) the weather conditions that affected the growing of the crop; (3) comparative prices paid for these grades

during the preceding season; (4) the trend of opening prices for these grades during the present season; and (5) comparative prices for the fruit in its fresh and processed forms.

First-grade oranges accounted for 45.42 to 89.44 per cent of the total auction sales, with the low point reached during 1936-37 and the peak during the follow-

tribution of auction sales and prices of Valencias was available for the six seasons from 1934 to 1939. During these six seasons some sixteen separate sizes of fruit were sold, varying from 80 to 560 oranges per box (Table 18). The average size of Valencias is much smaller than for Navels, varying between 221.3 to 250.9 oranges per box. The most important single size in each of the six seasons was as follows: 1934, 288's; 1935, 220's; 1936, 288's; 1937, 220's; 1938, 200's; and 1939, 288's. Generally, years of smaller fruit have alternated with years of larger fruit. Another indication of this is to be had when the proportion of Valencias of size 200 or larger is determined. For the six seasons since 1934 the proportion has varied from only 24.38 per cent in 1939 to 46.46 per cent in the preceding year.

The relation of size of fruit to the price realized per box is also shown in Table 18. Two measures are of importance here: the highest price paid for an important size and those sizes receiving price premiums, that is, prices exceeding the average price for all sizes. With respect to the first measure, size 200 in 1934, 1936, and 1937; size 176 in 1935 and 1939; and size 126 in 1938 received the highest average prices paid for Valencias in those seasons. In relation to the second measure, Table 19 indicates the sizes for which premiums were paid, together with the amounts of such premiums. No fewer than four or more than six sizes obtained premiums during any one season. Sizes 176 and 200 obtained premiums in every season; size 220 in five seasons; sizes 150 and 252 in four seasons; size 126 in two seasons; and sizes 100 and 288 in one season. If such data had been available, they might have indicated grade variations according to size. No apparent relationship seems to exist between the amount of the premi-

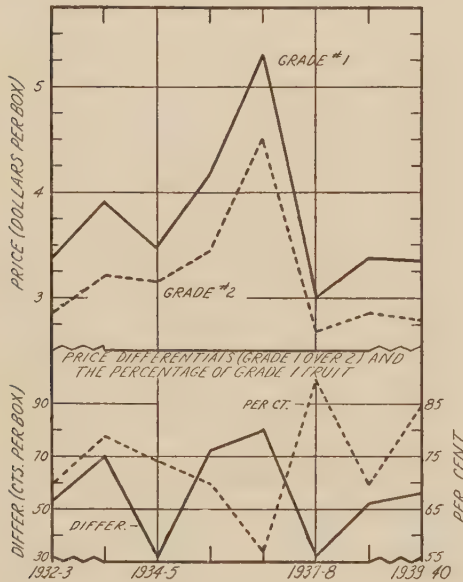


FIG. 4.—California Valencia prices at Chicago, by grade, 1932-33 to 1939-40.

ing season. The effect of these changes is to cause the premium for first-grade Valencias to vary from 32 to 80 cents per box, with the peak in premium coinciding with the peak in importance of second-grade fruit (Table 17 and Fig. 4). For most of the period the size of the premium has varied inversely with the proportion of first-grade fruit. As contrasted with Navels, there was a positive relationship between the level and the direction of change in prices and the level and direction of change of the premium for first-grade fruit.

Price in relation to size.—The size dis-

um and the average price that prevailed. The importance of these premium sizes in the total supply and for particular buyers' requirements should not be overlooked.

Prices realized by the California Fruit Growers Exchange and its competitors.—Consumers on the Chicago market were willing to pay premiums for the Valencia oranges of the California Fruit Growers Exchange, a fact which may be deter-

mium. However, the season in which the peak premium was realized was also the year in which the competitors' volume of second-grade fruit reached its peak of relative importance. In that year, too, the price for competitors' second-grade Valencias exceeded the price for the first grade by an average amount of 11 cents per box.

THE COMPOSITE LONG-RUN PRICE STRUCTURE FOR ALL VARIETIES OF CALIFORNIA ORANGES

TABLE 2*
PRICES REALIZED BY THE CALIFORNIA FRUIT GROWERS EXCHANGE AND COMPETITORS FOR VALENCIAS SOLD ON THE CHICAGO AUCTION, 1930-31 TO 1939-40

Crop Season (Nov.-Oct.)	California Fruit Growers Exchange Price	Competi- tors' Price	Differential in Favor of California Fruit Growers Exchange
1931-32.....	\$3.26	\$2.96	\$0.30
1932-33.....	3.22	2.68	.54
1933-34.....	3.75	3.60	.15
1934-35.....	3.39	3.23	.16
1935-36.....	3.96	3.63	.33
1936-37.....	4.97	4.62	.35
1937-38.....	3.03	2.58	.45
1938-39.....	3.23	2.80	.43
1939-40.....	3.28	2.91	0.37

* Source: California Fruit Growers Exchange (Chicago office).

mined by a comparison of the prices realized by the co-operative with those of its competitors (Table 2). In only the 1933-34 and the 1934-35 seasons did the amount of the premium fall below 20 cents per box; for four seasons it ranged between 30 and 37 cents; in two seasons it reached 43 and 45 cents, respectively; and in 1932-33 a peak of 54 cents was registered. There appears to be no definite relationship between either the quantity or the relative importance of the competitors' sales of Valencias and the size of the co-operative's price pre-

While the seasons of auction sale for California Navels and miscellaneous varieties is quite different from that for California Valencias, some notion can be given, nevertheless, of a composite price structure in terms of average prices according to the calendar year and in terms of average prices on a crop-season basis (November through the following October) by grade and by returns for the California Fruit Growers Exchange and its competitors. The overlapping price structure for these varieties in certain months is discussed later.

The trend of average prices.—In general, the composite average of prices for all varieties of California oranges has tended to vary less than prices for any single component variety. The low price of \$2.84 in 1938 was 45 per cent below the peak of \$6.21 in 1930. Since 1931, however, the range between lowest and highest price has been much reduced (Table 61). In general, the decline in auction sales of all varieties combined continued long after the decline in prices had been checked. While prices and sales tended to move inversely, the rates of change for the two series were divergent.⁶

The grade of all California oranges sold.—Since first-quality fruit dominates

⁶ It should be remembered that these auction sales represent only a part of the total supply of

the auction sales of all California oranges, it is but natural to expect that such fruit would receive substantial price premiums. If the abnormally low proportion of such fruit in 1936-37 is excluded, auction sales consisted of from 75.30 to 90.75 per cent of first-grade oranges (Table 20 and Fig. 5). Buyers on the auction market paid premiums for

the proportion of first-grade fruit. The better assortment of brands and sizes with the higher proportions would seem to underlie the higher price premiums.

Prices realized by California Fruit Growers Exchange and its competitors.—When the price returns of the California Fruit Growers Exchange for all varieties sold are compared with similar prices re-

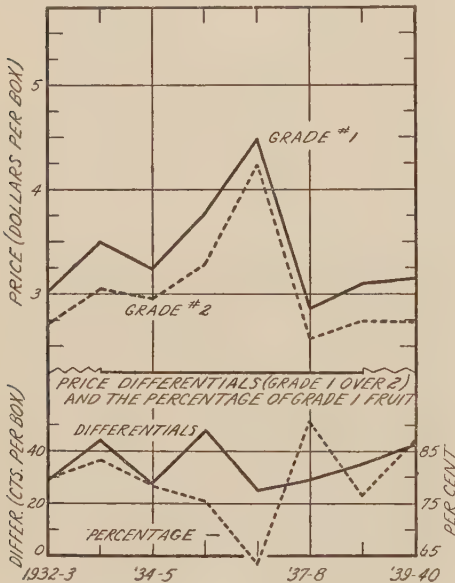


FIG. 5.—All California auction prices at Chicago, by grade, 1932-33 to 1939-40.

such oranges over the second grade ranging from 25 cents per box in 1936-37 to 48 cents per box in 1935-36. And, as can be seen from Table 20 and Figure 5, while the high point in premium coincides with the peak of prices, there is no relationship, generally, between the level of prices and the amount of such premiums. It should be observed, however, that the amount of the first-grade premium has moved together, generally, with

California oranges on the Chicago market. Further, between 1928 and 1933 there was a sharp decline in the proportion of such fruit sold on the Chicago auction.

TABLE 3*

PRICES REALIZED BY THE CALIFORNIA FRUIT GROWERS EXCHANGE AND COMPETITORS FOR ALL CALIFORNIA ORANGES SOLD ON THE CHICAGO AUCTION, 1930-31 TO 1939-40

Season (Nov.-Oct.)	California Fruit Growers Exchange Price	Competi- tors' Price	Differential in Favor of California Fruit Growers Exchange
1931-32.....	\$3.20	\$2.99	\$0.21
1932-33.....	2.98	2.55	.43
1933-34.....	3.43	3.04	.39
1934-35.....	3.19	3.04	.15
1935-36.....	3.67	3.29	.38
1936-37.....	4.43	3.93	.50
1937-38.....	2.87	2.56	.31
1938-39.....	3.02	2.70	.32
1939-40.....	3.10	2.82	0.28

* Source: California Fruit Growers Exchange (Chicago office).

alized by its competitors selling the same varieties, it is found that the advantage in favor of the former has varied from 15 to 50 cents per box during the crop seasons from 1931-32 to 1939-40 (Table 3). There appears to be no definite relationship between these differentials and either the level of prices or the percentage of the total auction sales controlled by the co-operative. However, the peak differential does correspond to the peak in prices.

THE LONG-RUN PRICE STRUCTURE FOR FLORIDA ORANGES

Although the term "Florida orange" is used here as though all oranges from

that state were of one variety, it must be remembered that, as a matter of fact, several varieties are involved. In the analysis that follows, it will be necessary, therefore, to indicate the structural factors involved not only for all Florida oranges but for each component variety where the data permit.

The trend of average prices.—In the case of all Florida oranges combined, the trend of average crop-season prices (October through the following June or July) has been exactly the reverse of auction sales (Table 62). Prices have ranged from \$2.25 per box in 1938–39 to \$4.72 in 1929–30. Despite a rather substantial recovery of prices in 1935–36 and 1936–37 after a precipitous decline from 1929–30 to 1932–33, the general pattern, nevertheless, has been downward for the period as a whole. Although auction sales and prices are inversely related, and although the trends have been following opposite directions, the rate of increase in sales has, far and away, exceeded the rate of decline in prices. This is particularly true of the rapid increase in sales between 1935–36 and 1938–39 and of the almost equally rapid decline since that latter year. Since sales and prices have had inverse trends, it follows that the total value of Florida oranges sold on the auction has been rather well maintained.

The varietal composition of Florida orange sales and prices.—From the viewpoint of the trade practices of wholesale middlemen on the Chicago auction market, Florida oranges may be subdivided into nine varietal groups: Duncans, Indian Rivers, Kings, Navels, Pineapples, "Round" Oranges, Seedless, Temples, and Valencias. Of these nine varieties, only the Indian Rivers, Pineapples, Round Oranges, and Valencias are sold in sufficient volume on the auction to warrant separate analysis.

Rather substantial shifts have taken place in the varietal composition of the Florida oranges sold on the Chicago auction (Table 21). From a position of dominating importance, Round Oranges⁷ have declined from a peak of nearly two-fifths of the total sales to 22 per cent in 1940–41. The importance of this variety has been fairly stabilized, however, since 1936–37. Part of the decline in the importance of this early-season orange is accounted for by a shift in trade preference to the Valencia, a late-blooming variety. Between 1930–31 and 1934–35 this variety accounted for 38.67 to 36 per cent of the total sales; between 1935–36 and 1940–41, however, its importance has fluctuated more widely, varying from 34 to 49.15 per cent, with peaks being reached in 1936–37 and again in 1940–41.

Another early Florida variety, the Pineapple, has fared better than the Round Orange. Between 1930–31 and 1933–34 this variety increased in importance from 13.24 to 32.32 per cent of the auction's total sales of Florida oranges. From 1933–34 to 1938–39 the importance of this variety became stabilized around 27 per cent, but in 1939–40 it reached its peak of importance—36.78 per cent—for the eleven seasons for which data were collected. A rather sharp decline took place within the next season (1940–41). Various varieties of Florida oranges produced in the Indian River section and designated by the trade as "Indian Rivers" have practically disappeared from the Chicago auction market after accounting for as much as 15.16 per cent of that market's Florida orange supplies. The availability of water transportation in reaching the Atlantic seaboard mar-

⁷ Round Oranges refer to the trade's designation for such early botanical varieties as the Hamlin and the Parson Brown.

kets, with lower transportation rates in recent years as compared with reaching middle western markets, accounts principally for the disappearance of these Indian River oranges from the Chicago auction.

The varietal composition of crop season prices.—What has been the relationship of the shifts in varieties of Florida oranges, as noted in the preceding section, to the prices realized by each on the auction? The results, for the principal varieties, are indicated in Table 22.⁸ Only the Indian River and Valencia varieties have shown any consistency in obtaining price premiums. For the former variety, only the year 1939-40 showed prices to be below the general market level. For the other seasons, however, such oranges obtained premiums ranging from 8 to 62 cents per box. It should be remembered, furthermore, that by 1939-40 the supplies of Indian Rivers on the auction were practically negligible. For Valencia oranges, only in the 1932-33 and 1937-38 seasons did prices fall below the general auction level of all Florida oranges. During the other seasons prices paid for this variety were 12 to 61 cents above the average.

On the other hand, prices of both Pineapples and Round Oranges were consistently below the market level, with the exception of two seasons for each. In the case of the Pineapple variety, discounts ranged from 13 to 47 cents per box; in 1937-38, however, prices were equal to the general market level; and in 1932-33, a premium of 11 cents per box was paid. For Round Oranges the discount varied from 4 to 28 cents per box. Premiums of 39 and 4 cents were paid for this variety during the 1937-38 and 1938-39 seasons, respectively. Nothing indicated that

these varieties were of lower grade. Since both of these varieties are early blooming, however, this fact appeared to furnish some explanation for the prevailing discounts. It was stated by members of the wholesale fruit trade that these oranges are often shipped to market in immature condition in order to obtain the generally high prices being paid for the California Valencias at the time. As a result, these trade members claim, the prices of Florida oranges are depressed during the following months below their "normal" values until consumers regain their confidence in the fruit.⁹ It should be noticed that the prevalence of comparatively low prices has reduced sharply the relative importance of the Round Orange but not the Pineapple variety. Perhaps some difference in sweetness exists between these varieties.

Prices in relation to grade.—Because of three changes which have taken place in the basic grades of Florida fruit sold on the Chicago auction during the period under investigation, it has been difficult to set up tabular comparisons.¹⁰ As a result, the breakdown of auction sales has been in terms of five grades: Fancy, U.S.

⁹ Some members claim also that the policy of the corporate grocery chains in featuring Florida oranges as "leader" produce items has resulted in the depressing of the prices for the early varieties.

¹⁰ From 1930-31 to 1935-36 the following grades were designated in the data available: Fancy, U.S. No. 1 Brights, U.S. No. 1 Goldens, U.S. No. 1 Russets, U.S. No. 1, U.S. No. 2, and U.S. No. 3. From 1935-36 to 1939-40 Florida oranges sold on the Chicago auction were designated as U.S. No. 1, U.S. No. 2, Combination (a mixture of Nos. 1 and 2), and U.S. No. 3. In 1940-41 the combination grade was further subdivided into two parts: (1) that consisting of 60 per cent U.S. No. 1 and 40 per cent U.S. No. 2 and (2) that consisting of 40 per cent U.S. No. 1 and 60 per cent U.S. No. 2.

The Citrus Inspection Bureau of the Florida State Department of Agriculture, however, continues to use a more detailed grading system. In 1939-40, for example, Florida oranges were designated as U.S. No. 1 Fancy, U.S. No. 1, U.S. No. 1

⁸ Data of actual prices for months and seasons are to be found in Table 62.

No. 1, Combination, U.S. No. 2, and U.S. No. 3. While these grades were all represented in fruit sold on the auction between 1930-31 and 1940-41, certain grades were not present during all seasons.

The most important tendency has been for both first- and second-grade fruit to be supplanted by the combination grade (Table 23). First-grade oranges declined from 56.35 to 9.66 per cent of the total sales between 1930-31 and 1938-39. No recovery of any significant proportions has since been noted. Second-grade fruit, after increasing from 41.05 per cent of the 1930-31 Florida sales to 69 per cent of the 1932-33 sales, has declined steadily, reaching its low point in importance—13.13 per cent—during the 1940-41 season. The reason for the decline in the importance of these grades lies in the demands of buyers on the auction for a combination of these two grades.¹¹ As a result, this grade of fruit was introduced first during the 1936-37 season and immediately accounted for 37 to 87 per cent of the auction sales of Florida oranges. By 1940-41, 73.39 per cent were of this grade, with the majority representing a mixture of 60 per cent of U.S. No. 1 and 40 per cent of U.S. No. 2 oranges.

The proportion of third-grade fruit sold on the auction has fluctuated between 0.58 and 9.81 per cent, with the peak in 1939-40. There were no oranges of this quality in 1940-41. No oranges representative of the Fancy grade have been available since 1935-36; prior to

that season, such fruit accounted for 0.13 to 2.02 per cent of the auction sales of Florida oranges.

The relationship of quality, as measured by grade, to price is indicated in Table 24. It is quite evident that, with one or two exceptions, the higher the grade of the orange, the higher was the auction price that was realized for it. These price differentials were greatest between the Fancy and the U.S. No. 1 grades and between the U.S. No. 2 and the U.S. No. 3 grades. In 1933-34 the price realized by U.S. No. 3 oranges exceeded the price for second-grade fruit, whereas in 1939-40 the price paid for third-grade oranges was the highest for any grade, despite the fact that the supply of this fruit was at its peak. No apparent explanation for this contradictory situation is possible.

Price in relation to type of container.—Beginning in 1936-37 and continuing during 1937-38, significant quantities of Florida oranges were marketed in two-bushel Bruce plywood boxes. Although these were abolished through joint action of the states of Florida and Texas, they have been replaced by a similar container of standard size. The proportion of Florida oranges shipped in standard boxes has declined from 72.71 per cent to 32.82 per cent in 1938-39 and 39.85 per cent in 1940-41, as a result of the introduction of the Bruce box (Table 4). Although a larger proportion of oranges have been shipped in Bruce as against standard boxes since 1938-39, the prices paid for oranges packed in standard boxes has exceeded those paid for Bruce boxes by 11 to 57 cents per box. The extremely high discount on the two-bushel container during the 1937-38 season undoubtedly hastened its withdrawal from the markets. But a discount of almost equal size in 1939-40 failed to do the

Bright, U.S. No. 1 Golden, U.S. No. 1 Bronze, U.S. No. 1 Russet, U.S. No. 2, U.S. Combination, U.S. Combination Russet, U.S. No. 2 Bright, U.S. No. 2 Russet, U.S. No. 3, and Culls.

¹¹ Much of this demand has originated from the buyers of fruits for corporate chain grocery stores; for, by concentrating on few sizes, more effective selling campaigns are possible in these units.

same for the one-and-three-fifths-bushel Bruce box. The discount reached its low point, however, during the next season.

The mere existence of a discount for oranges packed in Bruce boxes does not, however, present the complete picture. In 1939-40, for example, it was found that the standard box realized 48 cents

TABLE 4

RELATION OF TYPE OF SHIPPING CONTAINER
FOR FLORIDA ORANGES TO AUCTION
PRICES, 1936-37 TO 1940-41

SEASON	STANDARD BOXES		BRUCE BOXES*		DIFFERENTIAL IN FAVOR OF STANDARD BOXES
	Per Cent of Total Boxes	Price	Per Cent of Total Boxes	Price	
1936-37....	72.71	\$3.33	27.29	\$3.04	\$0.29
1937-38....	53.04	2.58	46.96	2.01	.57
1938-39....	32.82	2.37	67.18	2.19	.18
1939-40....	45.15	2.65	54.85	2.17	.48
1940-41....	39.85	2.51	60.15	2.40	0.11

* Two-bushel size for 1936-37 and 1937-38 converted to a one-and-three-fifths-bushel basis.

more than did the Bruce box on the Chicago auction. For that season it cost, however, 57.67 cents per standard box for packing, wrapping, and coloring the Florida oranges. At the same time similar costs for fruit placed unwrapped in one-and-three-fifths-bushel Bruce boxes were 44.44 cents, or a saving of 13.48 cents.¹² Thus, some part of the price discount for the Bruce box is offset by lower costs involved in packing and coloring oranges to be placed in such containers.

Price in relation to size.—Altogether, some 28 separate sizes of Florida oranges, ranging from 64 to 490 per standard box,

were sold on the auction from 1933-34 to 1938-39. But, as was the case for other varieties of oranges, less than half of these were of importance. Between 1933-34 and 1938-39 the average size of the Florida orange varied from 193.5 to 225.7 per box. This corresponds closely to the average size of all Florida oranges shipped in the United States (Table 25).¹³ With the exception of the 1934-35 season, more than one-half of all Florida oranges sold on the auction were size 200 or larger. Similarly, with the exception of the 1934-35 season, when the 252 size was the most important, the largest proportion of the Florida oranges has been size 176.

When the size of fruit is related to prices realized on the auction, it was found that the highest prices were paid for 200-size oranges for four of the six seasons; during 1935-36 the 252-size orange received the highest prices; and during 1937-38 the 216 and 288 sizes represented the premium sizes. During the six seasons the 176 and 200 sizes realized prices that always exceeded the average for all sizes. This was true for five seasons for sizes 216 and 252, for three seasons for size 288, for two seasons for size 324, and for a single season for size 150.

Prices realized by the Florida Citrus Exchange and its competitors.—Despite the fact that the Florida Citrus Exchange controls a much smaller share of the total orange crop of its state than the California Fruit Growers Exchange does of oranges from California and Arizona, it has been able to exercise a more-than-proportionate influence over Florida oranges sold on the auction (see Table 12). And, notwithstanding the fact that it has exer-

¹² H. F. Willson, "Marketing Florida Citrus: Summary of 1939-40 Season" (Washington: United States Department of Agriculture, October 9, 1940), pp. 76 and 77. (Mimeographed.)

¹³ *Ibid.*, p. 74. A definite cyclical tendency is apparent for these average sizes. From 1931-32 to 1935-36 the average size increased from 220.5 to 189.9 per standard box; from 1935-36 to 1939-40 the average size declined from 189.9 to 216.0 oranges.

cised less and less control over these auction supplies, it has been able, nevertheless, to sell its oranges at prices higher than those realized by its competitors. Between 1930-31 and 1936-37 this co-operative's premium ranged from 22 to

32 cents per box; since 1936-37 this has been reduced to a range of 12 to 18 cents. The decline in the proportion of Florida oranges controlled by the co-operative has affected, seemingly, its ability to maintain its former price advantage.

CHAPTER III

THE NATURE OF THE SEASONAL PRICE STRUCTURE

IN THE preceding chapter some preliminary indications of the importance of the seasonal factor were given. It will be the purpose of this chapter to elaborate on the nature of the seasonal price structure of the various varieties of oranges according to four main characteristics: (1) to indicate the trends of auction prices and sales; (2) to show seasonal variations in such prices and sales; (3) to present seasonal variations in the sizes of oranges sold on the auction; and (4) to measure the variability of monthly prices.

The complexity of the seasonal price structure is an outgrowth, first of all, of the existence of different supply states for oranges. The existence of these supply states reflects in turn the impact of natural environmental factors as well as the influence of botanical factors. For example, although Florida oranges are generally available from October through the following June or July, the exact dates of the first and last shipments are a partial function of the size of the crop and such factors as weather conditions and presence of satisfactory price levels for the California summer oranges. In the third place, the seasonal pattern is affected by the variety of botanical types of oranges available and by the improve-

ments made in such types. Such improvements lead ultimately to wider acceptance of the fruit by consumers. And, finally, the seasonal pattern reflects previous prices paid for each botanical variety of orange as well as the prices of oranges between competing markets and the relation of orange prices to the prices of competing products.

THE COMPOSITE PRICE STRUCTURE FOR ALL VARIETIES OF ORANGES

Trends in seasonal prices and sales.—

In order better to visualize monthly variations in the average prices of all varieties of oranges, and in the sales of such oranges on the Chicago auction, these data have been plotted in Figure 6. While it is immediately apparent that the prices and sales are inversely related, this relationship does not exist for all months; nor does it exist to the same degree year after year, for the relative changes in volume of auction sales vary as compared with changes in the average monthly auction prices. Further, the peak of sales sometimes precedes and sometimes lags in timing with reference to the peaks of prices.

Table 26 summarizes these points year by year. It will be observed that, in general, there is no apparent relationship

between the amplitude of fluctuation in sales and the amplitude of fluctuation in prices. The highest amplitudes for both series do not occur in the same years, nor do the lowest amplitudes coincide. Only in 1930 did the month of highest sales correspond exactly with the month of lowest prices. On the other hand, the month of lowest sales and that of highest

has replaced September as the representative low sales month.

Between 1928 and 1940, January, February, March, April, and December each represented the low point for monthly prices. December was, in fact, the typical low month during seven of these thirteen years. Moreover, there has been a tendency, since 1934, for the

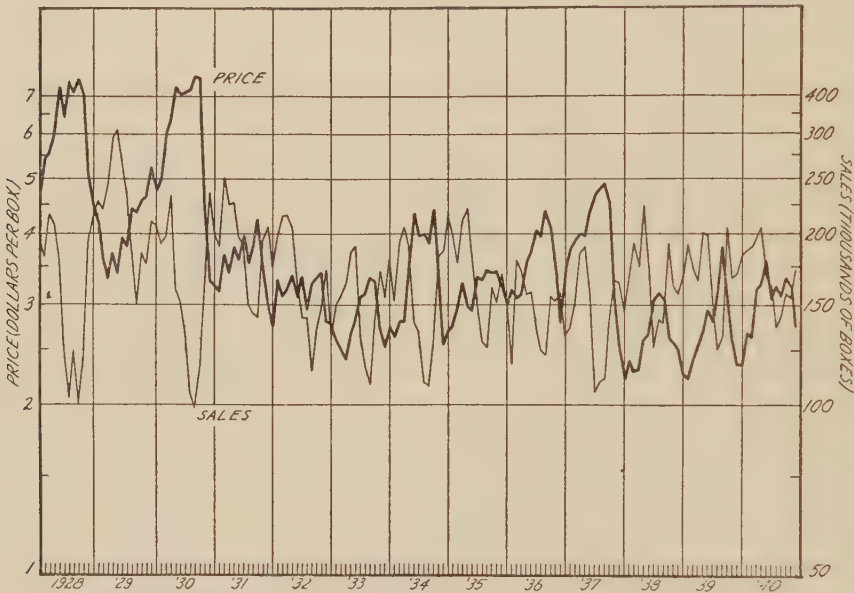


FIG. 6.—Monthly auction sales and prices of all oranges, 1928–30

prices coincided during 1930, 1931, 1933, and 1935. The pattern of occurrence of the months of peak and bottom prices and sales has undergone change as well. March, April, May, June, October, and December, respectively, were the months of peak sales between 1928 and 1940, with May occurring most frequently. Since 1931, however, the peak month has been either March, April, or May, with the exceptions of 1933 and 1939. Between 1928 and 1935, September was the month of lowest sales, with the exception of 1931, when October was the low month. Since 1935, February, July, or August

monthly prices to be lowest during the winter months of December, January, or February. Further study of Table 26 discloses that the peak of monthly prices has occurred during May, June, August, September, October, November, and December. September may be considered the representative month of peak prices, for top prices were registered five out of seven times during that month between 1933 and 1939.

Measures of seasonal variations.—In order to secure a better measure of the changes in monthly prices and sales since 1928, indices of seasonal variations were

computed (Table 27).¹ Between 1928 and 1932 the peak in auction sales of all oranges was reached in April, and sales above the average monthly figure took place from December through May. In that six-month period 58.3 per cent of the year's total sales was registered (on the average). During the next five-year period, 1933-37, sharp changes are apparent. The peak sales month shifted to May; and sales were above normal in January, from March through June, and in November and December—seven months in all. During these months 64.6 per cent of the total sales took place. In the succeeding three years, 1938-40, the peak month remained unchanged, but the month of lowest sales shifted from September to August. During this period sales were above normal from February through June and in October; together, these months accounted for 55.2 per cent of the annual sales.

The drastic changes in the indices of seasonal variation of sales between periods may be explained by three changes in the nature of the auction's orange supplies: (1) a decline in the importance of California Navels; (2) an increase in the importance of California Valencias reaching the market during the summer and autumn months; and (3) sharp increases in the supplies of Florida oranges, particularly of the later varieties.

These changes in the monthly composition and fluctuations of auction sales have had their effect on the seasonal variation of prices. Between 1928 and 1932, prices, on the average, were highest in October and lowest in December. Dur-

ing this period prices were generally above the monthly average between May and October. Although December remained the month of lowest prices throughout the next five-year period, September had replaced October as the month of highest prices. During these years prices above normal were registered between June and October. From 1938 to 1940 the peak month continued to be September, but two other changes took place. The month of lowest prices shifted to January during these three years, and above-normal prices were registered from May through November.

Variability of seasonal prices.—When the average departure of monthly prices from the weighted average price is expressed as a percentage of that average price, an index of variability is obtained (Table 5).² The monthly average deviation has ranged from 5.8 to 20.9 per cent of the average annual prices. Although prices were most variable during 1930, when the second highest average price for the period was recorded, no close agreement exists generally between the level of prices and the amount of variability. Furthermore, there are no indications of any regularity in the variability of such prices. The nature of the seasonal orange supplies, the quantities of such supplies, and the changes in underlying demand conditions are vital factors affecting the variability of monthly prices.

² The method of computing the indices of price variability was as follows:

d = Deviation of average monthly price from seasonal average price

P = Seasonal average price

w = Weight based on number of boxes of oranges sold during the month

$\frac{\sum wd}{\sum w} = AD$ = Average weighted price deviation

$\frac{AD}{P}$ = Index of monthly price variability

¹ These indices were computed in the following manner: (1) the data of absolute sales and prices were averaged for the periods indicated and (2) these monthly averages were then expressed as relatives of the average of such data for twelve months. The sum total of these indices for each month equals one hundred times the number of months involved.

THE COMPOSITE PRICE STRUCTURE
FOR ALL VARIETIES OF CALI-
FORNIA ORANGES

Trends in seasonal prices and sales.—The lack of exact inverse relationship between the monthly prices and monthly auction sales of all varieties of California oranges may be seen in Table 28. First, no definite relationship can be found between years when the amplitude of fluc-

TABLE 5

INDEX OF VARIABILITY OF AVERAGE MONTHLY
AUCTION PRICES AT CHICAGO FOR ALL
VARIETIES OF ORANGES, 1928 TO 1940

Year	Weighted Monthly Deviation (Cents)	Average Price	Index of Variability (Deviations as Per Cent of Average Price)
1928.....	92.2	\$5.93	15.5
1929.....	46.8	4.03	11.6
1930.....	121.8	5.84	20.9
1931.....	25.6	3.56	7.2
1932.....	18.4	3.16	5.8
1933.....	24.0	2.80	8.6
1934.....	57.1	3.31	17.3
1935.....	24.0	3.12	7.7
1936.....	42.1	3.51	12.0
1937.....	62.8	4.02	15.6
1938.....	21.8	2.60	8.4
1939.....	32.1	2.71	11.8
1940.....	29.9	3.02	9.9

tuation of sales and amplitude of fluctuation of monthly prices moved together. Second, in no single year did the month of peak sales coincide with the month of lowest prices. On the other hand, in 1928 and in 1935, the month of lowest sales was concurrent with the month of peak prices.

Generally, the spring and early summer months marked the high points in auction sales. However, the increased importance of Valencias during 1938 and 1939 resulted in the establishment of an October peak in each of these years. Each of the five months—March, April,

May, June, and October—registered the peak of sales at least twice in the years between 1928 and 1940, with May representing the peak month for four years. In all but four of the thirteen years tabulated, January or December marked the low period for prices realized by California oranges. During these thirteen years, January was also the month of lowest sales four times, whereas September, November, and February each accounted for lowest sales during three years. Prices were highest in the month of September for five years, in the months of October and November for three years each, and in August and December for one year each.

Indices of seasonal variations.—Table 29 presents an index of seasonal variations in auction prices and sales of all California oranges comparable to that computed for all varieties of oranges. The downward shift in importance of Navels compared with Valencias is reflected in the indices of auction sales of all California oranges. April was the peak month of sales between 1928 and 1932 on the average. During the five years between 1933 and 1937 the peak month had shifted to May, and the entire seasonal pattern had become more regular. From 1938 to 1940, October displaced May as the highest sales month, and the whole seasonal pattern had changed. For the first five-year period studied (1928–32), sales were above normal from March to July and in December; during these six months 56.1 per cent of the year's sales was recorded. In the years 1933 to 1937, sales were above normal from April through July and in December; and these five months accounted for 46.2 per cent of the average annual sales in each of these five years. From 1938 to 1940, sales were above normal from May through October, and

these six months accounted for 58.2 per cent of the total annual sales.

In spite of the extreme changes in the nature of the seasonal variations of auction sales during the last three years studied, no change in the basic nature of the pattern of seasonal variations in monthly prices is to be noticed. Generally, prices rise steadily from January through September or October and then decline rapidly. Between 1928 and 1932, and from 1933 to 1937, prices were above normal from May through October; and, from 1938 to 1940, prices were above normal from May through November. During the first two periods prices were lowest in December; but, from 1938 to 1940, prices reached their lowest point in January.

Variability of seasonal prices.—The variability of monthly auction prices realized by all varieties of California oranges ranged from 6 per cent of the average 1935 price to 16.7 per cent of the 1930 price (Table 30). In six of the thirteen years for which data were available, monthly variability exceeded 10 per cent. Although no definite relationship exists between the size of monthly deviations and the average price involved, it should be observed that the peak index corresponded with the peak price. No tendency is apparent for prices of all California oranges to become stabilized at any given level of variability or to become less variable.

THE PRICE STRUCTURE FOR CALIFORNIA NAVELS

Indices of seasonal variations.—California Navel oranges are produced and moved to consuming markets during the winter and spring months. The pattern of monthly sales and prices for this variety for the Chicago auction market is indicated in Table 31. No great changes

are noticeable in the general seasonal pattern of auction sales of Navels. Relatively low quantities of early Navels are available in November to meet Thanksgiving requirements; but, by Christmas, supplies are above normal. There is a continued increase of supplies to an April peak, after which a rapid decline sets in. From 1928-29 to 1932-33 above-normal sales were recorded from December through April; in the next two periods, 1933-34 to 1937-38, above-normal sales began in December, as before, but extended into May.

More substantial shifts have taken place in the pattern of prices over the thirteen years examined. For the first five years, 1928-29 to 1932-33, the earliest oranges brought the highest prices. By February in each of these seasons prices were near normal, increasing to a second peak in May, when supplies once again became scarce. The premium paid for early Navels has tended to disappear; however, during the next two periods; and prices accordingly have reached their seasonal peak in May. This change in the seasonal pattern has brought about a substantial reduction in the range of seasonal variations.

Prices in relation to size.—Seasonal prices are affected by month-to-month changes in the average size of the oranges to be sold. Although these changes are not regular from year to year, they are, nevertheless, of considerable importance (see Table 32). For the six seasons from 1933-34 to 1938-39 the average size of Navels has ranged from 145 to 225.9 per box. In 1936-37 there were 20.9 more oranges per box in December than in April; in 1935-36 there were 50.1 more oranges per box in February than in December. Generally, an attempt is made to supply the larger oranges for the Thanksgiving and Christmas holidays

but not always with success. During four of the six seasons there was a definite tendency for the season's largest-sized Navel oranges to be sold during March, April, and May; but in 1935-36, and again in 1938-39, this trend was not maintained.

The effect of these sharp variations in size of oranges is reflected in the prices realized. Table 33 presents the highest-priced sizes by months for six seasons as well as the number of sizes sold at prices above the general average.³ Those sizes receiving the highest prices during the first four seasons were principally the 200 to 288 per box. In the succeeding two seasons, 1937-38 and 1938-39, the larger sizes, particularly 80 to 100 per box, were sold at the highest prices. From four to seven different sizes during any one month sold for prices which exceeded the general average.

Variability of seasonal prices.—Although average monthly deviations of Navel prices at Chicago varied from 1.8 to 12.6 per cent of the average seasonal price, the relative fluctuations are very stable (Table 34). Only during the 1928-29 and 1936-37 seasons did the index of variability exceed 10 per cent. For all other seasons except 1940-41, the index moved within limits of 4.8 to 9.5 per cent. Evidently, the increased competition faced by Navels from both Florida and Texas oranges has not resulted in increased variability of the prices for that variety.

THE PRICE STRUCTURE FOR CALIFORNIA VALENCIAS

Indices of seasonal variations.—The California Valencia orange was available for sale on the Chicago auction between the months of April and December dur-

ing the 1928 to 1940 seasons (see Table 35).⁴ In general, the volume of such oranges placed on sale is not important until the month of May. Consequently, a highly concentrated seasonal movement is to be found. No marked changes have characterized the pattern of monthly sales of Valencias at Chicago. The movement from June to October accounts for the great bulk of total sales during any season. The most significant change noticeable has been the shift of the month of peak receipts from June, on the average, during 1928-32 to July during 1933-37 and to October during 1938-40. A further change in the pattern of sales has been the decline in importance of the month of May. This, in turn, has brought about an increased importance for sales recorded between June and October.

Because of the concentration of sales during the months of May to November, the seasonal pattern of prices shows the peak being reached in October during all the seasons between 1928 and 1937. In the first five of these seasons, prices generally were in excess of the monthly average price from May through November; in the succeeding five seasons, above-average prices were obtained from June through November. During the last three years analyzed, 1938 to 1940, the seasonal pattern underwent a rapid change. Valencia prices during the month of December are usually low because of small supplies of Valencias as well as because of the influx of plentiful quantities of Navel and Florida oranges. In these three seasons, however, prices in September and November as well as in December were above the monthly average. It should be observed here, also,

³ This analysis excludes sizes for which sales were not significant.

⁴ Small quantities were sold in January, 1934 and 1940; February, 1940; and March, 1928, 1934, and 1938.

that the range of seasonal fluctuations for these seasons was much reduced compared with the preceding periods.

Price in relation to size.—It has been mentioned already (chap. ii) that the Valencia orange is a much smaller orange than the Navel. Between 1934 and 1939 its average size never exceeded 221.3 oranges per box, but this number increased to 250.9 in 1939 (Table 36). On a monthly basis wide variations are to be found in any season between the largest and the smallest average sizes. For the six seasons tabulated this range has varied from 21.3 to 43.1 oranges. With the exception of the 1937 season, the larger-sized oranges usually have appeared on the market during the early months of the season. In 1937, however, excluding the month of June, Valencias were largest from September through November. Furthermore, Valencias were larger than the seasonal average during November and December, 1938, and during November, 1939. On the whole, with only March and April, 1938, excepted, the average size of Valencias was never larger than 216 to the box.

The effect of these variations in the average size of the fruit on the price is made clear in Table 37. With the predominance of small oranges among the supplies of Valencias offered for sale on the auction, it might be expected that price premiums would be paid for the larger-sized fruit. And that is exactly what has happened. In thirty-eight of the forty-eight months for which data were collected, the highest prices were paid for 200 or larger size fruit; the 176 and 200 sizes especially were sold as the highest-priced sizes. The emphasis on larger sizes was particularly apparent in the 1938 and 1939 seasons. During any one month throughout the six seasons studied, from two to eight sizes of Valen-

cias realized price premiums; the number occurring most frequently was five sizes, followed in order by four and six.

Variability of monthly prices.—The range of fluctuations in monthly prices has been very regular when related to the average seasonal price (Table 38). Although the departure of monthly prices from their respective seasonal average has varied from 3.4 to 8.6 per cent of those averages, in general the level of variability has been stable. It seems that sharp increases in the amount of the average seasonal price have failed to cause an accompanying rise in the index of variability. Evidently, the lack of oranges from competing states, coupled with the production control of the California Fruit Growers Exchange, has resulted in the maintenance of much smaller relative variability of Valencia prices than in the prices of Navel oranges.

THE PRICE STRUCTURE FOR FLORIDA ORANGES

Indices of seasonal variation.—As has already been pointed out in chapter ii, the shipping season for Florida oranges, unlike that of either California Navels or California Valencias, involves the movement of several varieties of fruit. The existence of these different varieties affects the general course of month-to-month quantities of Florida oranges available for sale on the Chicago auction. But the changing relative importance of the early varieties in relation to the late varieties has caused changes in the basic pattern of monthly quantities sold on the auction.

Florida oranges generally have been sold on the Chicago auction from October of one year through July of the succeeding year (Table 39). Between 1928-29 and 1932-33 sales were above normal

from December through the following May, with the peak recorded in January. From 1933-34 to 1937-38 sales were above normal in November and from January through May. The peak reached in January of these five seasons fell below that of the preceding period, for a secondary peak was registered in April. The sharp increase at this time in the importance of the Valencia variety was largely responsible for the occurrence of this secondary peak. In the final three-year period analyzed, 1938-39 to 1940-41, the original pattern was once more established. Again sales were above normal from December through May, and the January peak reached its highest relative position of the three periods.

Above-normal prices were recorded in November and from February through May during the seasons of 1928-29 to 1932-33, the highest price being registered in May. In the next five-year period, 1933-34 to 1937-38, prices were above normal in October and from April through June, the peak having shifted to June, the month of next-to-lowest sales. By the season of 1938-39 and in the succeeding two seasons, June had become established as the month of peak prices; and, during this period, prices were above normal in October and from March through June.

This composite seasonal picture of sales and prices of Florida oranges is a resultant of sales and prices principally for the Pineapple, Round Orange, and Valencia varieties. The seasonal movement of Pineapples takes place from November through March, with the peak occurring in January, and with sales above normal from December through February. Prices are very regular; above-normal prices are recorded in February and March, the latter also be-

ing the peak month. Round Oranges are usually available from October to April; in addition to November, when the peak is registered, sales are above normal during January and February. A sharp increase in the importance of sales in October was apparent from 1934-35 to 1938-39. Prices of Round Oranges were generally highest in October and above the seasonal average for this variety in that month as well as in November and March. The Valencia is the late-variety Florida orange and is sold on the Chicago auction usually between February and June. The peak of such sales takes place either in April or in May, depending upon the particular season. Prices are above normal in May and June and usually reach their peak in the latter month.

Prices in relation to size.—For the six seasons from 1933-34 to 1938-39 the average size of Florida oranges sold on the Chicago auction has varied from 193.5 to 225.7 per standard box (Table 40). The general tendency is for the size of the fruit to become larger as the season progresses. In all years when the two-bushel Bruce boxes were used, the average size of oranges sold in such containers was considerably larger than the fruit sold in the one-and-three-fifths-bushel standard box. The largest range in monthly sizes were to be found in the 1934-35, 1936-37, 1937-38, and 1938-39 seasons.

In twenty-three of the fifty months for which data were collected and analyzed, the highest average monthly prices were paid for the 200-size Florida oranges (Table 41). Two other sizes, 252 and 288, received top prices during ten months each; and at least five additional sizes received highest prices during one to four months each. From two to seven

different sizes realized price premiums during any one month;⁵ in sixteen of the fifty months, four was the most common number of premium sizes recorded. In addition, three sizes received premiums during ten months, and five and six sizes during eight months each. Finally, for seven months of the fifty similarly analyzed, premiums were paid for as many as seven separate sizes.

Variability of monthly prices.—The fluctuations of monthly prices of Florida oranges around the average seasonal price has varied from 4.3 to 18.3 per cent of such prices (Table 42). For four of the thirteen years the index of variability exceeded 10 per cent, and for five years it ranged from 8 to 10 per cent. It is inter-

⁵ Those sizes of which only small quantities were sold on the auction during any single month have been excluded.

esting to note that the variability of prices for all varieties of Florida oranges exceeds the variability for each of the three principal varieties. The variability of prices for Pineapple oranges has been rather stable, although fluctuating between 0.9 and 10.5 per cent. On the other hand, prices of Round Oranges have shown a definite tendency to become more variable, the index of variability ranging from 3.4 to 19.4 per cent. The variability of Valencia prices increased from 0.6 per cent in 1930-31 to 10.8 per cent in 1933-34. By 1936-37, however, this index had declined to 3 per cent, only to increase once again to a peak of 11.5 per cent in 1939-40. During the next year there was another drop of the index, this time to its second lowest point for the entire period—1.9 per cent.

CHAPTER IV

THE NATURE OF THE SHORT-RUN PRICE STRUCTURE

ALTHOUGH the most detailed analyses of prices for oranges realized on the Chicago auction can be made with reference to daily data, the present chapter is concerned only with three important aspects of such data; namely, the extent to which the requirements of wholesale and retail middlemen are reflected in daily variations in the volume of auction sales, the extent to which shippers' brands of oranges influence the daily price structure, and the extent to which daily auction prices fluctuate. Some attention is paid to the influence on daily prices of such factors as the use of wrappers where the comparison can be made for the same brands of

oranges on the same day and for approximately the same range of sizes.

Some approximation of the complexity of the short-run price structure may be obtained by referring to Figure 7. This graph represents the prices, classified according to sizes, realized on December 20, 1937, from the sale of twenty-nine cars of California Navels (about 13,400 boxes). Each dot represents the price realized by one of the 267 lots of fruit (excluding salvage lines) into which the twenty-nine cars were divided for purposes of that day's auction sales. The actual prices realized ranged from \$1.70 to \$4.90 per box and were related to some twenty-seven different shippers'

brands. Some idea of the differences in ranges of prices realized according to the size of the fruit may be obtained from the figure.

DAY-TO-DAY VARIATIONS IN THE VOLUME OF AUCTION SALES

Data of daily sales of oranges were available for the principal varieties from 1928 to 1939; this meant that compari-

tailers' busiest day, but on Monday (Table 43). It might be argued, of course, that the peak on Monday may result from the retailers' necessity for replenishing supplies depleted during the preceding week-end rush. Since sharp variations exist, however, between the three important varieties, a subdivision of the analysis must accordingly be set up on such a basis.

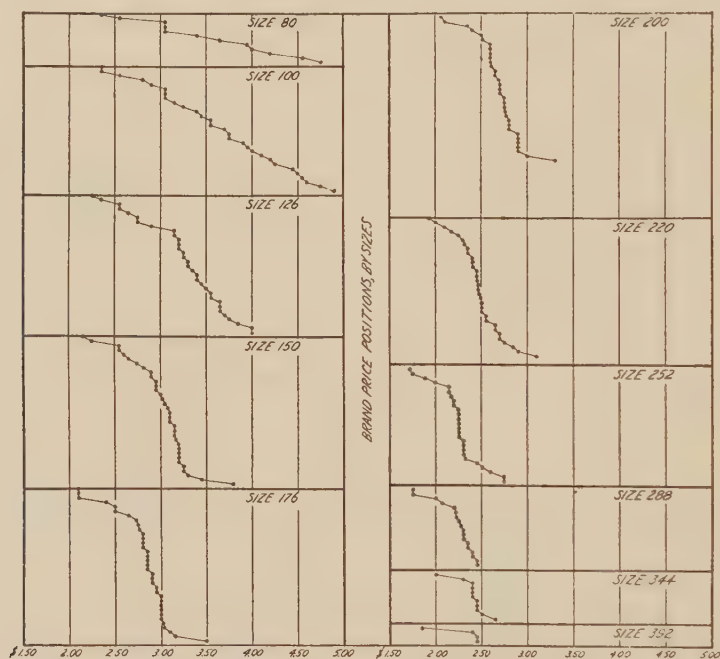


FIG. 7.—Prices realized from auction sales of twenty-nine cars of California Navels at Chicago, by brands and sizes, December 20, 1937.

sons could be made for California Navels and Florida oranges for eleven complete seasons and for twelve seasons of sales of California Valencias. Since it takes a few days for oranges sold on the auction to move through the dispersing types of wholesale middlemen to various kinds of retailers (including service establishments), it will be found that the busiest day of the five-day week for the auction occurs not on Friday, just before the re-

California Navels.—The position of Monday as the day of largest auction sales of California Navels remained unchanged for the eleven seasons, 1928-29 to 1938-39. On that day for the period indicated, from 28.06 to 31.17 per cent of the week's total auction sales took place. Although a downward trend is apparent, no sharp decline in the importance of Monday is to be noticed. With the exception of the three seasons from

1933-34 to 1935-36 and again in 1938-39, Tuesday has ranked as the second most important sales day. Its importance has ranged from 17.13 to 22.03 per cent of the weekly total sales but has shown a tendency to change more abruptly than the relative sales on Monday. Wednesday and Thursday generally alternate as the third most important sales day, but, since 1936-37, sales on Wednesday have exceeded those on Thursday. The importance of the Wednesday sales has varied from 15.82 to 20.11 per cent of the weekly totals. In addition to ranking as third in importance during 1928-29, 1931-32, 1932-33, 1936-37, 1937-38, and 1938-39, it also ranked second during the 1934-35 season. No general change in level of importance is noticeable.

After a rapid increase in importance from 1928-29 to 1933-34 from a low of 15.51 per cent of the weekly totals to a high of 19.33 per cent, sales on Thursday have declined so as to offset such gains as had been made. Since 1931-32, sales on Friday have been consistently lower than for any of the other four days. Although sales as a percentage of the total for the week varied from 11.44 to 16.54 per cent, their level of importance has been remarkably stable since 1933-34.

California Valencias.—With the exceptions of the 1928, 1934, and 1935 seasons, the importance of each sales day of the week has declined regularly as compared to the preceding day. For the three seasons mentioned, sales on Wednesday fell below the volume on Thursday as a general rule. The importance of Monday has varied widely from 22.47 to 31.21 per cent; its low point in 1937 was but slightly higher than the volume of business done on Tuesday. Sharp recoveries during the next two seasons brought its volume back to the level of preceding seasons. With a range of 18.26 to 22.50 per

cent of the weekly sales, there has been some tendency for the importance of Tuesday as the second best sales day for California Valencias to decline.

Sales on Wednesday have fluctuated between 16.13 and 19.67 per cent, and accordingly, the position of that day has shown little or no shift. Thursday has shown some tendency to increase in importance as a sales day relative to Tuesday and Wednesday. Its proportion of the weekly sales has varied from 14.73 to 18.88 per cent. After declining sharply from 16.22 per cent in 1929 to 12.47 per cent in 1931, sales on Friday, relative to other sales days, increased rapidly and reached a peak for the period—17 per cent—in 1937.

Florida oranges.—With the exception of the outstanding importance of sales on Monday, no regularity can be observed in the daily distribution of auction sales for this variety of orange. Ranging from 28.84 to 36.22 per cent of the sales for the week, Monday has increased steadily in importance for the sale of Florida oranges. As a result, more of the weekly supplies of oranges from this state are sold on that day on a relative basis than for any other variety from the competing supply states.

The position of the other days, however, has shown no stability. Tuesday, ranging in importance from 17.23 to 21.32 per cent, has varied between being the second and the third most important sales day. Its proportion of the weekly business, however, has shown a steady decline. Auction sales on Wednesday have fluctuated widely from 15.59 to 20.91 per cent of the weekly totals. A rapid decline from 1931-32 to 1935-36 was offset by an equally rapid rise during the following three seasons. Thursday and Friday have alternated usually as the least important of the five sales days.

Sales on Thursday, fluctuating between 12.72 and 19.44 per cent, have been declining on a relative basis; Friday, with sales varying from 11.31 to 18.15 per cent, has shown some tendency to rise in importance.

SHIPPERS' BRANDS IN RELATION TO THE SHORT-RUN PRICE STRUCTURE

Despite the existence of federally established grades for oranges, daily auction prices reflect these grades principally to the extent that the variations in quality are reflected in the brands of oranges sold. From detailed data tabulated for four seasons from 1935-36 to 1938-39, it is possible to indicate the number of brands of each variety of orange sold on the auction; the number of brands receiving brand premiums; the amount of the average daily price premium received; and the number of, the importance of, and the premiums realized by the significant brands. In addition, it is possible to measure the importance of the sales of premium brands (as a proportion of the total) controlled by the principal co-operatives.

The number of brands of oranges.—Sharp changes take place in the number of brands of oranges sold on the Chicago auction as the volume of such sales fluctuates. Wide differences are to be found, also, in the number of such brands as between the principal varieties (Table 44). The peak in the number of brands of California Navels was reached during March, 1937, when 143 separate brands were represented in the auction sales. For Florida oranges the number of separate brands was increased by the introduction of the two-bushel Bruce box during three of the four seasons for which data were tabulated. Despite this, the largest number of brands in any month—

122—was represented in March, 1936, when the two-bushel Bruce boxes were of minor importance.¹

Of the three important groups of oranges, California Valencias had the greatest number of brands. These reached a peak of 208 in October, 1939, when the monthly sales likewise represented a peak for the four seasons analyzed. During the months from June through October, when the sales of Valencias are at a peak, the number of brands consistently topped 100, except for July, 1938.

The number and importance of the significant brands.—In order to facilitate the analysis of the relationship of brands to daily prices, some reduction in the number to be so analyzed had to be effected. Accordingly, two steps were taken: (1) attention was paid, first of all, to those brands whose monthly sales amounted to at least 1,500 boxes² and (2) detailed price premiums were analyzed for those brands which were established as being significant by step (1) during at least three months of each season. An exception was made if the proportion of the total sales for the season accounted for by a brand exceeded 1 per cent or where the brand appeared during a majority of the seasons.³

For California Navels, the number of significant brands was 27, 20, 21, and 21,

¹ As tabulated here, the number of Florida brands was increased by the fact that the same basic brand name might be used for two or more different grades of fruit (e.g. Ariana, U.S. No. 1, and Ariana, U.S. No. 2). In such cases, the same brand name was counted as many times as a separate grade was indicated.

² Except that, in the case of Florida oranges packed in the two-bushel containers, the brand was considered significant if monthly sales amounted to at least 1,200 of such boxes.

³ The names of the significant brands of California Navels, California Valencias, and Floridas, by seasons, together with the percentage of the respective season's total sales accounted for by each,

respectively, for the seasons studied. Similarly, for California Valencias the number of significant brands was 18, 19, 20, and 17, respectively; and for Florida oranges packed in standard boxes, 13, 13, 14, and 19, respectively. During the 1936-37 and 1937-38 seasons the number of brands of Florida oranges packed in two-bushel Bruce boxes that were sig-

TABLE 6

PERCENTAGE OF SEASON'S AUCTION SALES OF ORANGES, BY PRINCIPAL VARIETIES, ACCOUNTED FOR BY THE SALES OF SIGNIFICANT BRANDS, 1935-36 TO 1938-39

SEASON	CALIFORNIA NAVELS	FLORIDA ORANGES		CALIFORNIA VALENCIAS*
		Standard Boxes	Two-Bushel Bruce Boxes	
1935-36	37.04	33.22	No sales	43.20
1936-37	24.28	39.59	34.00	45.00
1937-38	37.03	43.81	49.25	53.69
1938-39	33.85	55.39	No sales	38.78

* Calendar-year basis.

nificant amounted to 12 and 16, respectively.

But mere numbers of significant brands do not reflect the importance of their sales in relation to total sales. Table 6 compares the importance of the significant brands of the three varieties of oranges on the basis of the percentages of sales accounted for during each of four seasons. With the exception of the 1936-37 season, the percentage of sales represented by the significant brands of California Navels has moved within close limits, just exceeding one-third of the total volume. For Florida oranges the increase in the volume of fruit sold on the

Chicago auction has been accompanied by an even greater increase in the importance of the significant brands, with the peak reached in 1938-39, when the number of such brands jumped to 19 and accounted for nearly three-fifths of the total volume of such fruit sold. The proportion of the total sales of California Valencias on the auction represented by the sales of significant brands was on a level considerably above that for California Navels for the four seasons.

Of great importance to buyers is the extent to which the shippers of a given brand maintain uniform volumes of oranges, relatively speaking, on the Chicago auction market. The data indicate the regularity of movement of oranges under each of the basic brand names for the four crop seasons studied. Although thirty-four such brands of California Navels were represented, only thirteen⁴ appeared on the list during each of the four seasons. The combined sales of these brands accounted for 18.51, 18.86, 27.10, and 27.04 per cent, respectively, of each season's total auction sales of California Navels. Only eight of the thirteen brands⁵ accounted for 1 per cent or more of at least each of three season's sales. Sales of the "Airship," "Gavilan," "Mansion of Piru," and "Victoria" brands showed definite increases in relative importance. Another seven brands⁶ of Navels were sold during at least three seasons, accounting for 6.93, 1.89, 7.41,

⁴ "Airship," "Arizona Desert Sweet," "Four Square," "Gavilan," "Genuine," "Golden State," "La Verne Beauties," "Malta," "Mansion of Piru," "Paul Neyron," "Pocahantas," "Superfine," and "Victoria."

⁵ "Airship," "Four Square," "Gavilan," "La Verne Beauties," "Malta," "Mansion of Piru," "Paul Neyron," and "Victoria."

⁶ "Quality," "Stork," "Surebest," "Terra Bella," "1000 Grand," "Volunteer," and "Wonderland."

and the number of months in which such brands were significant, are available in the author's original thesis on file in the library of the University of Chicago.

and 4.32 per cent, respectively, of each season's total auction sales.

Only thirty brands of California Valencias could be listed as of basic significance, and, of these, eight⁷ consistently appeared for each of the four seasons. The combined sales of these eight brands, however, accounted for 29.62, 29.26, 30.46, and 28.91 per cent, respectively, of each season's sales of all Valencias during 1936-39. With the exception of the "Paul Neyron" brand for all seasons, and the "L Co Selected" brand for 1939 and the "Montezuma" brand for 1937, each one consistently accounted for 1 per cent or more of every season's sales. No tendency is apparent for any marked changes in the relative importance of the eight brands, except for an increase for the "Whittier" brand. An additional six brands⁸ were represented during at least three seasons. These accounted for 4.50, 7.77, 9.05, and 6.28 per cent, respectively, of each season's total sales.

Only six⁹ of twenty-eight brands of Florida oranges packed in standard boxes appeared for each of the four seasons. Their combined sales accounted for 21.44, 26.75, 25.72, and 13.53 per cent, respectively, of the total sales in each of the seasons. Of the six brands, the "Ace High," "Bull Frog," and "Prince of Wales" alone accounted for consistently 1 per cent or more of each season's sales. Sharp declines, over the four seasons, in the relative importance of the "Bull Frog," "Deer Island Blue," and "South Lake" brands were offset, in part, by the sharply increased movement to the auc-

⁷ "Airship," "L Co Selected," "Mansion of Piru," "Montezuma," "Mupu," "Paul Neyron," "Santa," and "Whittier."

⁸ "Greenleaf," "L Co Loma," "NWB Selected," "Strength," "Weaver of Piru," and "Wonderland."

⁹ "Ace High," "Bull Frog," "Deer Island Blue," "Plymouth Rock," "Prince of Wales," and "South Lake."

tion of "Prince of Wales" oranges. And the "Mid Palms" brand, which did not appear on the Chicago auction for the 1935-36 to 1937-38 seasons, accounted for sales during 1938-39 of 84,633 boxes, equivalent to 13.94 per cent of that season's total sales of Florida oranges.

Five additional brands¹⁰ were sold on the Chicago auction for three of the four seasons for which data were tabulated. These brands had combined sales representing, respectively, 6.39, 7.52, 11.49, and 6.42 per cent of each season's total sales of Florida oranges. Sharp declines in the importance of the sales of the "Deer Island Red" and "Fellowship" brands were offset to some extent by the increased importance of sales of "Mayflower" and "Pheasant" oranges.¹¹

The importance of the basic brands as price premium realizers.—The basic brands did not, of course, all command price premiums on the days on which they were offered for sale at the Chicago auction. Nor did those brands which commanded such price premiums obtain them every time they were offered for sale. The amount of the average daily premium reflects the use of a weight consisting of the number of boxes sold at the respective prices. Generally, better than one-half of the basic brands for any variety of oranges during any of the seasons analyzed obtained price premiums when sold on the Chicago auction. In many seasons better than 70 per cent of the basic brands received such premiums (Table 45). For the four seasons there has been a decline in the number of basic brands of California Navels and California Valencias obtaining premiums,

¹⁰ "Deer Island Red," "Fellowship," "Mayflower," "Pheasant," and "Wren."

¹¹ Since only two seasons of sales of Florida oranges packed in two-bushel boxes were of importance, no detailed analyses of such data were made.

while such brands of Florida oranges have increased somewhat more rapidly than the total increase in the number of basic brands.

One of the primary indicators of the ability of any particular brand to command price premiums at any day's sales on the auction is the regularity with which such premiums are obtained. For California Navels thirty-three significant brands had some part of their auction sales receiving price premiums during at least one of the four seasons. Fourteen of the brands received premiums during each of the four seasons, five for three seasons, three for two seasons, and eleven for one season. Of the brands consistently receiving premiums during the four seasons, "Gavilan" and "Mansion of Piru" Navels received such premiums for 90 per cent or more of their total sales. The "Airship" brand's sales receiving price premiums ranged from 81.74 to 97.61 per cent, and "Four Square" sales from 60.78 to 71.12 per cent. The remaining brands in this group varied between wider limits. Especially to be noted were the sharp declines in the premium position of "La Verne Beauties," "Paul Neyron," and "Quality."

The five brands of California Navels which received premiums during three seasons had proportions of their total auction sales receiving such premiums as follows: "Stork," 12.50 to 75 per cent; "Surebest," 61.90 to 100 per cent; "Terra Bella," 49.82 to 72.29 per cent; "1000 Grand," 40.71 to 50 per cent; and "Volunteer," 60 to 74.80 per cent. None of these showed any consistent tendencies either to increase or to decrease such premium proportions.

The remaining brands of California Navels were highly variable in their premium positions. Seven received price premiums on one-half or more of the auc-

tion sales of such brands during the seasons when they appeared. Such brands as "Collegiate," "Highway," "Indian Hill," "Mupu," and "Rialto" represented significant quantities on such occasions.

For California Valencias, of twenty-nine brands represented, seven received premiums during all four seasons, five during three seasons, seven during two seasons, and ten for but a single season. With the exception of two brands, those receiving brand premiums during each of the four seasons did so on from 78.70 to 100 per cent of the respective amounts sold on the auction. Outstanding, particularly, was the stability of the premium position of the "Mansion of Piru" brand. It should be observed, also, that fewer brands of Valencias than of Navels commanded price premiums during each of the four seasons. This was offset to some extent by the larger volumes of sales accounted for by the brands of Valencias. Notable was the decline suffered by the "Airship" brand of Valencias during the 1939 season in commanding price premiums after having all sales command premiums during the preceding three seasons.

"Strength" was the consistently outstanding brand of California Valencias commanding price premiums on a three-season basis; "Paul Neyron" among the two-season premium brands and "Quality" and "Rey" among the one-season premium brands are likewise to be noted.

Of the twenty-eight brands of Florida oranges (packed in standard boxes) receiving premiums, six did so for four seasons, four for three seasons, four for two seasons, and fourteen for a single season. Outstanding among the four-season brands was "Deer Island Blue," with 99.78 to 100 per cent of its auction sales receiving price premiums. Significant

declines, for the same group, were to be noticed in the premium positions of "Ace High," "Bull Frog," "Plymouth Rock," and "South Lake." On the other hand, the sharp increase both in number of boxes and in the proportion of the auction sales of "Prince of Wales" oranges receiving premiums was remarkable.

All four of the three-season premium brands—"Deer Island Red," "Fellowship," "Mayflower," and "Pheasant"—had significant proportions of their auction sales receiving such price premiums. None of the two-season brands, "Elk," "King of Wales," "Cardinal," or "Wren," consistently had as much as one-half of their respective auction sales receiving price premiums during the seasons when they were offered for sale. Although among fourteen brands, "Carillon," "Crane," "Gallant," "Mid-Palms," and "Richfruit" brands appeared for a single season, better than one-half of their respective auction sales commanded premium prices. This was particularly true of the "Mid-Palms" brand with its large sales volume in 1938-39.

For the Florida oranges packed in two-bushel Bruce boxes in 1936-37 and 1937-38 the more outstanding premium brands were as follows: "Bull Frog," "Duchess," "Duke," "Green J," "King of Wales," "Pheasant," "Prince of Wales," "Ridgetop," and "South Lake."

Size of average daily price premiums by brands: California Navels.—With a range in the amount of the average daily premiums by months from 2 to 64 cents per box, twenty-two basic brands were represented in the 1935-36 season. If a simple arithmetic average of the average daily premiums by months is computed, it will be found that only two brands commanded price premiums that averaged more than 40 cents per box for the sea-

son; three brands had premiums of 31 to 40 cents; four brands had premiums of 21 to 30 cents; eleven brands had premiums of 10 cents or less. The "Mansion" brand, during this season, was the brand which received most consistently the highest premiums. Of the remaining brands which received price premiums during more than a single month, "Gavilan," "La Verne Beauties," and "Mahala" placed highest in terms of the amount of the premium. These four brands, together with "Paul Neyron" and "Victoria" Navels, received premiums for the greatest number of months (five).

For 1936-37 fifteen brands were represented, and the size of the price premium per box each month averaged from 4 to 75 cents. On an average for the season, two brands received price premiums exceeding 50 cents per box; two brands, premiums of 41 to 50 cents; one brand, a premium falling in the 31- to 40-cent bracket; five brands, premiums of 21 to 30 cents; and the remaining five brands, premiums of 11 to 20 cents. No single brand dominated the premium market for Navels for the period as a whole. Six brands, however, received premiums for five months. Of these, "Gavilan," "La Verne Beauties," "Mansion," and "Victoria," ranked in order of importance, received the highest premiums per box.

For the 1937-38 season sixteen brands were listed as the most important receivers of premiums paid for California Navels. The amount of the premiums averaged, in general, well below the preceding season, ranging in size from 3 to 63 cents per box. Only one brand received premiums averaging more than 40 cents; two brands' premiums ranged from 31 to 40 cents; four brands, from 21 to 30 cents; seven brands, from 11 to 20 cents; and two brands, from 1 to 10

cents. Of the sixteen brands, only the "Victoria" Navels received premiums for six months and only the "Gavilan," "La Verne Beauties," and "Mansion" Navels for five months. Among these, the "Mansion" brand was the most consistent receiver of the highest price premiums, but the size of these was far below the price premiums paid for the first Navels of the season in November.

Only eleven basic brands were represented among the premium receivers for 1938-39, with the amount of the average daily price premiums ranging from 2 to 63 cents per box. Four brands received premiums which ranged from 31 to 40 cents for the season's average; five brands, premiums from 21 to 30 cents; and two brands, premiums from 11 to 20 cents. "Gavilan" and "Victoria" Navels were the only brands to receive price premiums for five months, while "Airship," "Lotus," "Mansion," and "Paul Neyron" were so represented for four months. Of these, "Airship," "Victoria," and "Mansion," in order of importance, received the larger premiums.

Size of average daily price premiums by brands: California Valencias.—In contrast to the situation for California Navels, fewer basic brands of California Valencias tended to receive price premiums during any of the four seasons for which data were collected. Generally, however, those brands received larger premiums for more months. In 1936 thirteen brands realized average daily price premiums varying from 4 cents to \$1.13 per box. Each of these brands received its respective price premiums during this season for a minimum of five months. These Valencias packed under the "Airship" and "Mansion" labels received the highest prices over the season as a whole. Next in order were the "Montezuma" and "Rey" brands. Of the thir-

teen brands to be found in the premium class, two received, on the season's average, premiums exceeding 60 cents; two brands received between 41 and 50 cents; three received between 31 and 40 cents; three received between 21 and 30 cents; and three received between 11 and 20 cents.

Twelve brands during the 1937 season received average daily premiums which ranged from 4 cents to \$1.88 per box. Each of these brands received its respective price premiums for a minimum of four of the seven months when such premiums could be realized. California Valencias under the "Mansion" label consistently topped the market and received an over-all price advantage which, for the season, averaged \$1.03 per box. Next in order were "Airship" with 88 cents, "Strength" with 69 cents, and "Mupu" with 60 cents. The distribution of the remaining brands, by size of premiums, was as follows: 41 to 50 cents, "L Co Selected" and "Montezuma"; 31 to 40 cents, "NWB Selected" and "Paul Neyron"; 21 to 30 cents, "Santa" and "Whittier"; 11 to 20 cents, "Stela"; and 1 to 10 cents, "Mohican."

Only nine brands commanded price premiums in 1938. These premiums, which were below the level of the preceding season, varied from 3 to 97 cents per box according to brand. Only "L Co Selected" Valencias received price premiums in fewer than five months. The "Mansion" brand, with premiums realized in eight months, averaged 14 cents per box higher for the season than "Airship" Valencias, the next highest-priced brand. With the exception of these two brands and "Strength," premiums for the season averaged less than 20 cents per box.

Ten brands received price premiums during at least four months of the 1939

season which averaged from 7 cents to \$1.15 per box. For those brands which received premiums for more than four months, "Mansion" Valencias accounted for the highest amounts, just nosing out the "Mupu" brand for first honors. "Santa," "Whittier," and "Airship" were next in importance. Based on the amount of the average price premium for the season, one brand received in excess of 60 cents per box; two brands received from 51 to 60 cents; two brands received from 41 to 50 cents; three brands received from 31 to 40 cents; and two brands received 21 to 30 cents.

The relative abilities of the same brand names to command the higher prices paid for both California Navels and Valencias should not be overlooked. It would appear, however, that somewhat more stable relationships seemed to exist in the Valencia market compared with the Navel market.

Size of average daily price premiums by brands: Florida oranges.—Only nine basic brands, packed in standard boxes, received price premiums during the 1935-36 season. When averaged, these varied month by month from 2 to 82 cents per box. Each of the nine brands realized its respective price premiums for at least three months out of the nine-month season. "Mayflower" and "Deer Island Blue" oranges generally obtained the highest prices, followed closely by the "Fellowship" and "Bull Frog" brands. For the season as a whole, the daily price premiums realized by all brands averaged below 40 cents per box.

In 1936-37 only eight brands packed in standard boxes were represented. Price premiums ranged from a low of 4 cents per box to a high of 73 cents. Generally, "Deer Island Blue" oranges, with an average premium of 42 cents per box for the season, topped the market, fol-

lowed by the "Fellowship" brand. With the exception of these two brands, no others had price premiums which for the season amounted to more than 30 cents per box. During the same season, six basic brands packed in two-bushel Bruce boxes received prices exceeding the average monthly prices paid for all oranges in such containers. Of these, "Ace High" and "Yankee Boy" realized the highest premiums, although "Ridgetop" received premiums during the largest number of months.

For 1937-38 eleven brands packed in standard containers accounted for premiums in realized prices which ranged from 1 to 74 cents on a monthly average basis. During nine months, "Deer Island Blue" was the highest premium brand, although "Carillon" oranges led during three out of the four months that they appeared on the auction. With the exception of these two brands and those oranges packed under the "Ace High" label, no other oranges realized premiums which averaged over 25 cents per box.

With reference to the market for the two-bushel boxes during 1937-38, twelve basic brands commanded premiums ranging from 3 to 93 cents per box. Outstanding was the ability of the "Duchess" brand to realize premiums which averaged over twice as much as those for "Duke," which was the second most important brand. The price premiums which buyers paid for the remainder of these brands never exceeded 26 cents on a seasonal average basis.

The peak number of brands receiving price premiums for the period was reached during the 1938-39 season, when fourteen were so classified. The lowest premium was 1 cent per box as contrasted with a peak of 65 cents. As was the case for the three preceding seasons,

"Deer Island Blue" once more was the most consistent premium brand, averaging, for the season, 44 cents per box above the general price level for all Florida oranges. The next closest contenders were the "Crane" and "Prince of Wales" brands with premiums of 30 and 28 cents, respectively. The remaining brands could not command premiums which would average as much as 20 cents per box for the season. In three cases that average was less than 10 cents.

The relationship between premium brands and the co-operative associations.—On previous occasions the importance of the California Fruit Growers Exchange and the Florida Citrus Exchange in controlling the volume of fruit offered for sale by the Chicago auction has been analyzed. This control extends itself, of course, to the matter of premium brands. For California Navels the "Sunkist" co-operative shipped 95.92 to 98.67 per cent of the brands receiving price premiums during the four seasons 1935-36 to 1938-39 (Table 46). For California Valencias the co-operative's control was somewhat greater, ranging from 97.70 to 99.49 per cent. The Florida Citrus Exchange controlled from 43.23 to 56.00 per cent of the oranges from Florida which were packed in standard boxes and which received price premiums. The Exchange apparently was less able to command premiums during the last two seasons of the period for which data were analyzed. For the two-bushel Bruce boxes the percentages ranged from 23.91 to 38.90.

Once again the data indicate that, as compared with the Florida co-operative, the California Fruit Growers Exchange has not only a greater degree of control over the oranges moving to market but also a greater stability of that control.

Price premiums paid for wrapped fruit.—It was possible in thirty-seven

instances during the 1938 season to make direct comparisons between prices realized on the Chicago auction for the same brands of California Valencias sold on the same day from the same car in both wrapped and unwrapped condition (Table 47). In only one instance, during the month of July, was the unwrapped fruit able to command a higher average price which yielded a premium of 11 cents per box. For all other sales the advantage of the wrapped fruit ranged from 1 to 33 cents per box; in the great majority of the cases, the differential in favor of the wrapped fruit amounted to 10 cents or more per box. This would seem to give more than sufficient margin to cover the cost of wrapping materials and labor involved for wrapping operations.

It was impossible to make such comparisons for Florida oranges. In the first place, generally speaking, the unwrapped fruit was associated at the same time with a difference in type of container. And, second, in most cases direct comparisons could not be made for the same brands. Nevertheless, the fact that standard boxes usually commanded higher prices than Bruce boxes reflected in part the difference between wrapped and unwrapped fruit.

THE VARIABILITY OF DAILY PRICES

The data of Table 48 compare the variability of the daily auction prices for California Navel, California Valencia, and Florida oranges.¹² For the seasons for which such indices of variability were computed, the daily prices of Florida oranges showed the greatest variability,

¹² The daily price variability for each variety was measured by expressing the mean deviation of each day's price from the average monthly price, weighted by the number of boxes sold, as a percentage of the average monthly price.

and the daily prices of California Navels the least variability, with the Valencia prices in an intermediate position. Generally, there was a tendency over the period 1928-29 to 1938-39 for the variability of the daily prices for the California Navels and Florida oranges to decline. On the other hand, the index for California Valencias declined up to 1937, but in 1938 and 1939 the range of variability was at a peak for the eleven seasons for which such data could be computed.

For all varieties there was a general tendency for daily prices to fluctuate most widely during the opening and closing months of each season when the volumes of oranges offered for sale were likely to be lowest and when the size and brand assortment were less likely to be complete. Exceptions to this general tendency, however, may be noticed for each of the three varieties.

During the ten full seasons for which the index could be computed for California Navels, it ranged from a low of 1.2 per cent of the April, 1936, average price to a high of 142 per cent of the January, 1937, average price. Daily prices during forty-two of the seventy-five months had variabilities of less than 5 per cent of their respective average monthly prices. In only nine months did the index exceed 7.5 per cent. And, with the exception of the 1936-37 season, the range between the months of lowest and highest variability moved within limits of 4 to 7.5 percentage points. No regularity of seasonal change was to be observed.

For Florida oranges (packed in standard-size boxes) during ten full seasons the index of daily price variability fluctuated between a low of 2.9 per cent of the April, 1932, average price and 26.6 per cent of the October, 1928, average price. As contrasted with the variability of daily prices for California Navels,

only twenty-nine out of the eighty-five months for which the index was computed for Florida oranges saw the variability fall below 5 per cent of each month's average price. On the other hand, in thirty-seven months the daily prices were so variable that the index rose above 7.5 per cent. And in only three seasons did the range between the month of lowest and the month of highest variability fall below 7.5 percentage points. It should be noticed, however, that the variability of daily prices moved between much narrower limits during the four seasons 1935-36 to 1938-39 than in the preceding six seasons. For the period during which the two-bushel Bruce boxes were used, the variability of daily prices paid for Florida oranges in such containers showed about the same range as for Florida oranges packed in the standard-size container.

Data of daily price variability for California Valencias were available for eleven seasons from 1928 to 1939. The index ranged from a low of 0.6 per cent of the May, 1939, price to a high of 17.9 per cent of the October price during the same season. In the eighty-two months for which variability was determined the index amounted to less than 5 per cent of the average price for forty-four months. On the other hand, the daily prices of California Valencias showed a variability of greater than 7.5 per cent of sixteen months' prices. During four seasons the range in the index between the lowest and highest variability month exceeded 10 percentage points; for the remaining seven seasons the range involved only 3 to 8.3 percentage points, with the majority below 6 percentage points.

If one measure of a competitive market is the readiness with which prices change from day to day, then the indices of variability indicate in a positive way

that the price structure of the Chicago auction for oranges is definitely competitive. For it can be seen that, despite the large amount of control that the co-operatives have over the supplies of oranges offered for sale, such control has not suc-

ceeded either in reducing the amount of the daily price changes (expressed as a percentage of the monthly average price) or in reducing the degree of such changes, to any considerable extent, from season to season.

CHAPTER V

THE INTERRELATIONSHIPS OF THE PRICE STRUCTURE AT CHICAGO WITH PRICES IN NINE COMPETING AUCTION MARKETS

FOR a commodity such as oranges any discussion of the nature of the price structure at one market must, at some point, consider the nature of the price structures at competing markets in order to establish the existence of an over-all price structure. The presence of a freight-rate structure for the oranges shipped from California permits wide use to be made of diversion-in-transit privileges. And, with a per capita consumption that establishes the fruit on a national scale of use, some degree of interrelationship of orange prices at competing markets is inevitable when shippers and producers try to better their f.o.b. returns by preventing the glutting of certain markets at the same time that other markets are undersupplied. Such interrelationships are particularly important if the co-operative efforts of shippers and producers are to result in higher net yields to the co-operating members or if the proration activities of the state and federal governments are to accomplish the same results.

The nature of the wholesale market structure for oranges is such that nearly every city of 100,000 population or more would have to be considered in attempt-

ing to set up the spatial relationships of prices. Unfortunately, no such adequate market-news data are available in printed form.¹ There are sufficient data available, however, to permit valid comparisons to be made between prices and sales at Chicago and nine other leading auction markets representing some of the largest consuming areas in the country. These auction markets² furnish the basis for publication by the Federal-State Market News Service of the United States Department of Agriculture of weekly price data and the number of cars of Florida and California oranges sold, by seasons, since 1933-34.³ And these weekly data furnish, in turn, the principal foundation for the analysis made in this chapter of the spatial aspects of the price structure for oranges.

Although weekly price data could be obtained for nine auction markets in ad-

¹ Data of carlot rail unloads at sixty-six markets are available since 1927, by states of origin; data of truck unloads are available for considerably fewer markets only for the more recent years.

² Baltimore, Boston, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, and St. Louis.

³ These reports contain seasonal totals for Florida oranges covering the period since 1926-27.

dition to Chicago, it should not be assumed that the same intricate pattern of analysis could be established spatially as was used in analyzing the detailed data available for the Chicago market. First of all, the price data represent weighted averages of prices for a full week and, because of this averaging process, fail to show such details as the daily averages, the range of prices realized each market day, and the number of boxes of oranges sold at each realized price within the daily price ranges. Second, it was impossible to ascertain size and brand differentials in prices. Third, no complete division of the data was possible between varieties, although the separation could be made between the principal states of origin—California and Florida. Finally, those data which are published fail to cover completely the marketing seasons for all varieties of California oranges.⁴

THE LONG-RUN INTERRELATIONSHIPS

California oranges.—It is possible to compare prices at Chicago and nine competing auction markets for the eight seasons from 1933–34 to 1940–41 (Table 49). While the data do not completely cover the entire marketing season for Navels and Valencias (particularly the latter), that part actually covered is sufficiently long to make adequate spatial comparisons possible. Because of the varying lengths of the eight seasons considered, no chronological comparisons can be made of the movement of the absolute volume of sales or of the price data. But it is at once apparent that, season for season, the New York auction dominates the ten markets both in volume of sales and in the level of prices realized. Chicago ranks as the second most important

auction market and is followed, in turn, by Boston and Philadelphia. At the next level of importance, sales of approximately equal volume were recorded for Detroit, Pittsburgh, St. Louis, and Cleveland, although the respective volumes did not realize identical prices. The number of cars of California oranges sold on the Baltimore and Cincinnati markets fell far below the level of the other eight auction markets.

During each season auction prices at Chicago generally exceeded the prices per box realized at all other auction markets analyzed except New York (Table 50). In relation to New York, prices at the Chicago auction were lower by amounts ranging from 5 to 21 cents per box for each season, or from 1.51 to 6.77 per cent of the Chicago prices. During the 1933–34 season, however, prices at New York were lower by 22 cents per box, on the average, or by 7.31 per cent of the Chicago price. No consistent level of relationship between prices at the two auction markets was apparent for the eight seasons.

It has already been stated that prices at Chicago were generally higher than those at the other eight auctions. In relation to Philadelphia, Chicago prices were higher during the seasons from 1933–34 to 1936–37 by from 2 to 30 cents per box, the equivalent of 0.62 to 9.97 per cent of the Chicago price. Since 1937–38, however, prices at Philadelphia have twice been higher than at Chicago by 2 and 6 cents per box, respectively, or by 0.63 and 1.94 per cent of the Chicago price. Next to New York, prices realized on the Boston auction come closest to challenging the position of the Chicago market. From 1933–34 to 1936–37 the Chicago market was ahead by amounts of 1 to 12 cents per box, 0.31 to 3.99 per cent of the market's average prices. During the next

⁴ For some seasons the printed reports fail to cover the complete number of weeks making up the Florida season.

three seasons the Boston market topped Chicago prices by an average of 2 to 3 cents per box, while during the 1940-41 season the average prices realized on both auctions were identical.

Analysis of the remaining six auction markets revealed that Chicago consistently exceeded their average prices per box realized, but with the following exceptions: an equality of seasonal average prices with Cleveland during the 1939-40 season; and a differential of 3 cents per box in favor of Baltimore, on the average, during the 1937-38 season. Except in relation to the Cincinnati, Pittsburgh, and St. Louis markets, the price advantages of the Chicago market were sharply reduced during the 1939-40 and 1940-41 seasons.

With the exception of the 1933-34 season, when prices at Chicago averaged 18 cents per box higher (nearly 6 per cent of its base price), the interrelationships of prices at Chicago and the average for the ten auction markets have been exceptionally close, moving within a range of 4 cents per box in favor of Chicago during the 1935-36 season and 2 cents per box in favor of the ten markets combined during 1937-38 and again during 1939-40. Apparently, with no additional freight cost involved in moving California oranges from Denver to any eastern market, the average prices realized for the product at the ten markets averaged together was closely related to prices realized at the Chicago market, from which a considerable proportion of diversions to eastern markets was effected.

It is interesting to note that auction sales of California oranges at Chicago during each season failed to keep pace with the volume of sales at each of the nine competing auction markets. In every case, the volume of sales at each of

these auction markets, expressed as a ratio of the Chicago sales as a base, increased consistently between 1933-34 and 1940-41 (Table 51). New York, with the largest consuming population in the country, was the only auction market to sell more California oranges than the Chicago auction. The sales volume at that market exceeded the volume at Chicago by 1.56 to 2.56 times. Rapid increases in the volume sold on the Boston auction have brought that market's position to a level almost equal with the Chicago market. The Philadelphia auction was the only other one of the nine competing markets studied which had a volume of sales better than 50 per cent of the Chicago volume; in recent years that market has approached selling nearly four-fifths the Chicago base. Sales at Cleveland, Detroit, Pittsburgh, and St. Louis have, since 1937-38, accounted for 40 per cent or more, respectively, of the volume sold at Chicago. By 1940-41 sales at Cincinnati amounted to one-fourth of the Chicago base, and Baltimore sales totaled only 15 per cent of the Chicago volume. For the ten-market total, sales increased from 6.5 times the Chicago volume in 1934-35 to 7.3 times in 1940-41.

Florida oranges.—Available data make it possible, from a long-run viewpoint, to compare auction prices per box and sales of Florida oranges at seven to ten auction markets since 1926-27 (Table 52). A comparison of this table with Table 49 discloses that Chicago is much less important as an auction market for oranges from Florida than it is for California oranges. It is apparent, further, that the margin of difference between New York, the leading auction market, and Chicago in the sale of Florida oranges is far greater than was the case for oranges from California.

Generally speaking, all auction markets showed the same tendency for prices to reach a peak in 1927-28, a season when the volume of sales was the lowest for the fifteen-season period. Likewise, sales reached a peak at each auction market during the 1938-39 season, and, as a result, the prices realized reached their lowest point during the same period. Prices at all ten markets showed a tendency to move in the same direction from season to season, although the degree of such changes varied from market to market. And, as was the case for California oranges, auction prices at Chicago were generally higher than at any of the nine auction markets with the exception of New York. Since 1935-36, as a matter of fact, Chicago prices have tended to be higher than even those at New York.

Individual comparisons of prices at Chicago with those realized on each of the competing auctions are contained in Table 53. Although New York has had a price advantage over Chicago in eight of the fifteen seasons, ranging from 2 to 99 cents per box, the advantage was in favor of Chicago during the remaining seasons and ranged from 3 to 16 cents per box. Since 1935-36, as mentioned in the preceding paragraph, prices at Chicago have been higher in five of six seasons. In relation to Philadelphia, prices at Chicago, with the exception of the 1926-27 and 1927-28 seasons, have been higher by from 4 cents to \$1.10 per box, or from 1.20 to 21.65 per cent of the Chicago prices. In nine of fifteen seasons, prices at Chicago have exceeded prices at Boston by 1 to 65 cents per box, or by 0.31 to 12.80 per cent of the Chicago price. During the 1940-41 season the average prices were identical, whereas in the five remaining seasons Boston's price advantage ranged from 2 to 13 cents per box, or from 0.75 to 3.61 per cent of the re-

spective Chicago prices. Florida oranges sold at Pittsburgh, Cleveland, Cincinnati, and St. Louis have realized markedly lower prices, while in only two seasons at Detroit (1931-32 and 1933-34) and in only one season at Baltimore (1933-34) have prices been higher than at Chicago.

Because of the varying number of seasons for which data could be secured for each market, it is difficult to compare prices at Chicago with prices at all markets combined. But from 1926-27 to 1932-33, when seven to nine markets were represented, prices at Chicago were higher than those at the combined markets by 46 cents per box in 1929-30 and by 11 cents per box in 1932-33. Since 1933-34, however, prices at Chicago, with the exception of the first season, have been above the ten-market average by 3 to 17 cents per box, or by 1.16 to 7.51 per cent of the respective Chicago prices. The close adjustment between prices of California oranges at Chicago and ten markets was not found for Florida oranges, apparently because of the basic differences in the nature of the freight-rate structures for the fruit moving from the two producing states.

Furthermore, greater inequalities are to be found when auction sales of Florida oranges at nine auction markets are expressed as ratios of the sales at Chicago, by seasons, than was the case for California oranges (Table 54). Auction sales at New York ranked first during each of the fifteen seasons, varying from 5.86 to 10.03 times the volume sold on the Chicago auction, and with peaks established in 1932-33 and in 1940-41. Philadelphia ranked as the second most important auction with sales fluctuating between 2.27 and 4.22 times the Chicago volume. Little or no change is apparent in these ratios throughout the period. Boston's

sales volume of Florida oranges has varied from 1.05 to 1.78 times the Chicago volume, but little or no change is apparent in the level of such ratios over the period. Sales at Pittsburgh, slightly more than at Chicago during 1926-27, 1928-29, and 1929-30, have declined until at the end of the period (1940-41) they were but two-fifths of the Chicago volume. On the other hand, sales at Cincinnati, after declining from 0.77 to 0.52 times the Chicago volume, have since expanded so rapidly that by 1940-41 the ratio had risen to 1.06. Cleveland has generally accounted for about two-thirds of the Chicago volume, while sales at St. Louis, Detroit, and Baltimore each accounted for less than one-half. Data from 1933-34 to 1940-41 show that the combined auction sales at ten markets have ranged from 14.84 to 18.60 times the volume at Chicago. Prior to 1933-34, for seven to nine markets, the ratio varied between 12.75 and 18.21.

The notion of a long-run equilibrium of market prices.—It is possible to indicate one measurement of spatial equilibrium between the ten competing auction markets in the sale of California oranges by relating month-to-month price changes at each market to similar changes at all markets combined and, similarly, by relating the average monthly prices at each market to the average monthly prices for all combined. The relationships existing between 1927 and 1935, as indicated by coefficients of simple correlation computed by the Farm Credit Administration, are shown in Table 55 for both California Valencias and Navels.

These coefficients of simple correlation indicate immediately that the level of absolute prices for both varieties of California oranges at each individual auction is significantly related to the average price level for all auctions combined, in-

asmuch as no single coefficient fell below 0.961. This in turn means that at least 92 per cent of the variance in absolute prices at any single auction, on the average, is associated with the level of absolute prices at all auctions combined. Thus, the fact that high prices at a single market are associated with high prices at all markets, and vice versa, is, in itself, a very strong indicator of a certain stability in spatial price relationships.

This concept of a "normal" spatial price equilibrium is bolstered further by a comparison of changes in prices from month to month at each market compared with the average for the ten markets. Although the coefficients fell below 0.800 for changes in Valencia prices at Baltimore, and for Navel prices at Cincinnati, in the main they ranged between 0.888 and 0.983. These would seem to indicate, therefore, that if a sufficiently long enough period is selected to permit short-run differences in direction of change to be smoothed out, competing markets will be so related from a price viewpoint that changes from month to month will tend to be always in identical directions although not necessarily by absolutely identical amounts. Further indications of the stability of the equilibrium so measured are to be found in the fact that no drastic differences appear between the coefficients for Valencias and those for Navels, except at Baltimore, Cincinnati, and Cleveland. To what extent the stability of the equilibrium is due to the control of production and shipments exercised by the California Fruit Growers Exchange cannot be determined.⁵

⁵ The existence of a freight-rate structure permitting California oranges to be diverted without incurring additional freight cost has had, undoubtedly, an important bearing upon this stability. (See a later section of this chapter for a fuller treatment of this characteristic of the freight-rate structure.)

THE SHORT-RUN INTERRELATIONSHIPS

Although a large body of weekly data formed the basis for measuring the short-run interrelationships of the price structures at Chicago and nine competing auctions, necessities of space demanded that the analysis of such data be somewhat condensed. Accordingly, in the treat-

average week-to-week price changes for the ten markets combined.

Weekly price differentials between nine competing auctions and Chicago for California oranges.—Sufficiently detailed reports made possible the calculations of weekly price differentials for eight seasons beginning with 1933-34 and in-

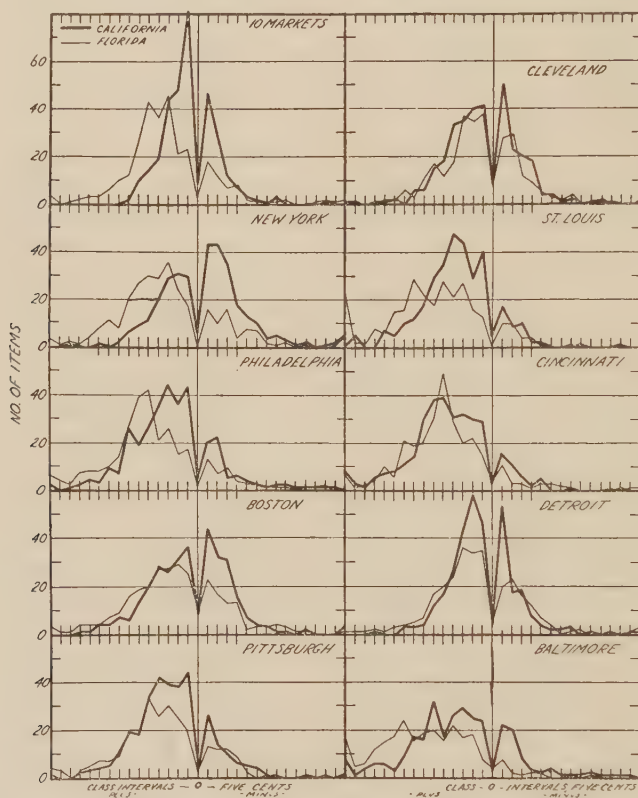


FIG. 8.—Frequency distributions of weekly California and Florida orange price differentials, Chicago over nine competitive auction markets, 1933-44 to 1940-41.

ment that follows only two sets of relationships were utilized: (1) frequency distributions of differences in prices, by weeks, between each of the competing auctions and Chicago and between all ten auctions combined and Chicago and (2) the determination of coefficients of simple correlation between week-to-week price changes at Chicago and the

volving in most cases a total of 331 weeks. Table 56 and Figure 8 show, for Chicago in combination with each competing auction and for the ten auctions combined, a frequency distribution of the resulting price differentials in terms of class-interval units of 5 cents per box. During this period of 331 weeks, prices at Chicago were lower than those at New

York for 185 weeks, or for 55.90 per cent of the time. During 6 weeks, 1.81 per cent of the time, prices at Chicago and New York were identical. Better than one-third of the total number of weekly price differentials were in favor of the New York auction by amounts ranging from 1 to 15 cents per box. On the other hand, about one-third of the differentials were in favor of Chicago by from 1 to 20 cents per box.

In relation to the remaining markets, Chicago prices were more consistently higher. Compared with Philadelphia, prices at Chicago were higher in all but 74 weeks; during 5 of these 74 weeks, prices at Chicago and Philadelphia were equal. More than one-half of the differentials (55.58 per cent) were in favor of Chicago by amounts ranging from 1 to 25 cents per box, while another 26 (7.85 per cent) were in the 31- to 35-cent bracket. About one-eighth of the 331 differentials tabulated were in favor of the Philadelphia auction by 1 to 10 cents per box. Not quite so concentrated a situation is found for Boston in relation to Chicago. In 178 out of 331 weeks, 53.77 per cent of the time, prices at Chicago were higher, while for 9 weeks (2.72 per cent) prices at the two markets were equal. Price differentials in favor of Chicago of from 1 to 20 cents per box occurred during 42.61 per cent of the period, whereas differentials of 1 to 15 cents per box in favor of Boston occurred for 32.33 per cent of the weeks. As compared with Pittsburgh, prices were overwhelmingly in favor of Chicago during 260 weeks, or 78.55 per cent of the time. Nearly three-fifths of the price differentials gave the Chicago market an advantage ranging from 1 to 25 cents per box. During about three-fifths of the period analyzed the prices realized on the Chicago auction exceeded the level of the

Cleveland auction. Differentials in favor of Chicago by 1 to 20 cents per box accounted for 45.01 per cent of the total number of 331, whereas 27.49 per cent were in favor of Cleveland by 1 to 15 cents per box.

Only 47 of 330 differentials, or 14.24 per cent, were equal to or above the Chicago prices when the St. Louis auction was examined. As a result, better than two-thirds of the differentials (68.19 per cent) favored Chicago by amounts varying from 1 to 30 cents per box. Similarly, during 328 weeks, prices at the Cincinnati auction were equal to or above the Chicago level for only 12.79 per cent of the time. Nearly 70 per cent of the differentials favored the Chicago auction by a range of 1 to 35 cents per box. Of the 331 weeks of price comparisons between Chicago and Detroit, it was found that prices at the latter auction equaled or bettered the Chicago level in 35.64 per cent of the cases. Somewhat better than one-half of the total number favored Chicago by amounts from 1 to 20 cents per box, while 16.01 per cent favored Detroit by from 1 to 5 cents per box. Out of 294 weeks, prices at Baltimore were equal to or above the Chicago level during 24.20 per cent of the time. Differentials in favor of Chicago of from 1 to 20 cents per box accounted for 35.39 per cent of the weekly comparisons, while another 10.89 per cent involved amounts moving between 26 and 30 cents. Nearly 15 per cent of the cases included differentials of from 1 to 10 cents per box in favor of Baltimore.

The extreme balance of the intermarket price relationships is seen when the prices at Chicago are compared with the average weekly prices at the ten markets combined. In the first place, with the exception of one week, price differentials in favor of Chicago never exceeded 35

cents per box, while those in favor of the ten markets never surpassed 40 cents per box. This was a much narrower range of fluctuation than existed between Chicago and each of the nine competing auctions considered individually. Second, during 81 weeks, or for 24.47 per cent of the total, the differentials in favor of the Chicago auction moved within a 1 to 5 cents per box range. Another 27.79 per cent involved differentials in favor of that auction of 6 to 15 cents per box. During 75 weeks, or 22.76 per cent of the cases, prices were in favor of the ten markets combined by from 1 to 10 cents per box.

Weekly price differentials between nine competing auctions and Chicago for Florida oranges.—As for the California oranges, sufficient data were published covering Florida oranges to make possible the determination of intermarket price differentials for the eight seasons from 1933-34 to 1940-41. In comparison with the frequency distributions for California oranges, it is at once apparent that the price differentials for Florida oranges follow a much less regular distribution (Table 57 and Fig. 8). This is particularly true for Chicago in relation to New York, Philadelphia, Boston, Pittsburgh, St. Louis, and Detroit.

Out of 295 weeks for which comparisons could be made, prices at Chicago were above the New York level in 222 weeks, or 75.26 per cent of the cases. Somewhat more than one-half of the number (56.27 per cent) showed differentials in favor of Chicago of from 6 to 35 cents per box.⁶ Better than four-fifths of

the price differentials between Chicago and Philadelphia, or 245 cases, were in favor of Chicago. Slightly more than one-half of the total number (52.55 per cent) involved differentials to that market's advantage by 11 to 35 cents per box.⁷ Slightly more than two-thirds of the Chicago-Boston price differentials, 196 out of a total of 288, or 68.06 per cent, were in favor of Chicago. These price differentials favoring this market by amounts ranging from 1 to 25 cents per box totaled 44.43 per cent of the cases; only 8 per cent favored the Boston auction by from 1 to 5 cents per box.⁸

For the remaining markets the proportions of the total number of price differentials in favor of Chicago were as follows: Pittsburgh, 79.93 per cent; Cleveland, 63.41 per cent; St. Louis, 88.82 per cent; Cincinnati, 88.54 per cent; Detroit, 67.02 per cent; and Baltimore, 91.69 per cent. Two-thirds of the Chicago-Pittsburgh price differentials were in favor of Chicago by amounts between 1 and 35 cents per box. Compared with Cleveland, 38.33 per cent of the differentials favored Chicago by 1 to 15 cents per box, while nearly one-fifth favored Cleveland by 1 to 10 cents. During the eight seasons analyzed some abnormal relationships existed between

crease the comparability of the price differentials comparisons, prices realized by this variety were excluded in the analysis. If the prices of this variety had been included, the differentials would have been changed in favor of New York by the following amounts: 1937-38, 9 cents; 1938-39, 6 cents; 1939-40, 8 cents; and 1940-41, 8 cents.

⁷ If the prices of Indian Rivers were included for Philadelphia, the general level of differentials in favor of Chicago would have to be lowered by the following amounts: 1937-38 and 1938-39, 3 cents, respectively; 1939-40, 7 cents; and 1940-41, 8 cents.

⁸ Again, if the prices of Indian Rivers were included for Boston, the price differentials would have to be revised in favor of that auction of the following amounts: 1937-38 and 1938-39, 7 cents, respectively; 1939-40, 19 cents; and 1940-41, 10 cents.

⁶ These differentials exclude the prices of Indian River Florida oranges at New York for the seasons 1937-38 to 1940-41 inclusive. Indian River oranges command substantial price premiums over other varieties of Florida oranges; but, with the exception of the Boston, New York, and Philadelphia auctions, no substantial amounts were sold. Therefore, to in-

Chicago and St. Louis. Twenty-three cases, 8.30 per cent of the total, showed differentials in favor of Chicago by amounts exceeding 70 cents per box. Another 18.53 per cent were in favor of that auction by 31 to 40 cents, while 27.44 per cent involved amounts of 11 to 25 cents per box. Nearly 73 per cent of the Chicago-Cincinnati price differentials varied from 6 to 45 cents per box in favor of Chicago, with as many as 17 per cent of these occurring in the 21- to 25-cent bracket. Over one-half of the Chicago-Detroit price differentials favored Chicago by 1 to 25 cents per box; on the other hand, only 15 per cent were in favor of Detroit by 1 to 10 cents. As was the case for St. Louis, prices at Chicago were abnormally related to Baltimore in terms of relative amounts as compared with other auctions. Sixteen cases, 6.32 per cent of the total, showed differentials in favor of Chicago by amounts exceeding 70 cents per box. The majority of the remaining differentials were in favor of that auction market by amounts fluctuating between 6 and 50 cents per box.

Despite some of the erratic relationships between Chicago and a few of the competing auctions, many tend to disappear when prices at Chicago are related to the averages for the ten markets combined. Nevertheless, the distribution still remains skewed in favor of the Chicago market. Out of a total of 295 weekly comparisons, 243 differentials, or 79.31 per cent, were in favor of Chicago; and nearly two-thirds (65.74 per cent) of these amounted to 1 to 30 cents per box. Slightly more than one-tenth of all differentials gave the ten markets an advantage of 1 to 10 cents per box.⁹

⁹ Once again the inclusion of prices of Indian River oranges would revise the general level of the weekly differentials in favor of the ten markets by the following amounts: 1937-38, 5 cents; 1938-39, 4 cents; 1939-40, 9 cents; and 1940-41, 7 cents.

The notion of a short-run equilibrium of market prices.—The shorter the time period, the less stable will be the price structure of any market and, accordingly, the less stable will be the interrelationships of these price structures. The important question, then, concerns the degree to which any concept of a spatial equilibrium can be discovered for the short-run period. To measure the pres-

TABLE 7

COEFFICIENTS OF SIMPLE CORRELATION BETWEEN WEEK-TO-WEEK AUCTION PRICE CHANGES AT CHICAGO AND TEN MARKETS FOR CALIFORNIA AND FLORIDA ORANGES, 1933-34 TO 1940-41

SEASON	CALIFORNIA ORANGES		FLORIDA ORANGES	
	No. of Items	Coefficient and Probable Error	No. of Items	Coefficient and Probable Error
1933-34.....	29	0.663±.070	32	0.488±.091
1934-35.....	34	.937±.014	32	.527±.086
1935-36.....	38	.718±.051	32	.483±.092
1936-37.....	39	.842±.031	34	.618±.071
1937-38.....	44	.731±.047	41	.607±.067
1938-39.....	49	.768±.040	43	.386±.088
1939-40.....	48	.845±.028	36	.574±.076
1940-41.....	42	0.818±.034	37	0.331±.098
Total.....	323	0.816±.013	287	0.530±.029

ence or absence of this equilibrium between Chicago and the nine competing auctions, the week-to-week changes in the prices of California and Florida oranges at Chicago were correlated, respectively, with similar changes for the ten markets combined. The results are contained in Table 7.

Immediately to be noticed is that, for the period 1933-34 to 1940-41, changes in California orange prices were much more closely integrated spatially than the similar changes in the prices of Florida oranges. While the coefficients of simple correlation of weekly price changes at Chicago and the ten markets for California oranges ranged between 0.663 and 0.937, with an over-all coefficient of 0.816, the comparable meas-

ures for the Florida price changes varied between 0.331 and 0.618, with an overall coefficient of only 0.530. It should be noticed, accordingly, that the probable errors of these respective coefficients were much smaller, absolutely and proportionately, for the California oranges.

From these coefficients it will be seen that, while from 64.48 to 68.72 per cent of the variance in the week-to-week changes of prices of California oranges at Chicago were associated with similar changes at the ten markets, on the average only 25.10 to 31.25 per cent of the variance was explained in the case of the week-to-week price changes for Florida oranges. It can be assumed only that the greater control, proportionately, over production and shipment of California oranges by the California Fruit Growers Exchange, the use of proration in the shipments of California oranges to markets,¹⁰ and the differences in the nature of the freight-rate structures (discussed immediately below) all lead to the more systematic relationships of prices for California oranges at the competing markets.

THE RELATIONSHIP OF INTERMARKET PRICE DIFFERENTIALS TO THE NATURE OF THE FREIGHT-RATE STRUCTURE

The nature of the freight-rate structures for California and Florida oranges.—The basic principles underlying the respective freight-rate structures in the two competing regions of production are illustrative of diametrically opposed theories of rate-making. On the one hand, the rail freight costs for oranges

moving from California are on a postage-stamp basis; that is, all origin points of shipments are considered as a single origin for the purposes of assessing freight rates, as are all the destination points grouped east of the "transcontinental line."¹¹ On the other hand, the Florida citrus fruit rates approximate, most closely, a mileage system. The shipping-points in Florida are classified into origin groups, and freight rates vary according to point of origin, even though the fruits shipped have a common destination.¹² Generally, Jacksonville is used as the base from which to measure distances both from the origin shipping-points and to the consuming markets.

These divergent rate bases have important effects on the abilities of the shippers from each producing state to make use of the diversion-in-transit privilege. This privilege is one of the prime factors making possible the equalization of supplies with the varying demand conditions existing in the competing markets. Because of the postage-

¹¹ "A line running southward from the Canadian border approximately along the Montana-North Dakota, Montana-South Dakota, Wyoming-South Dakota, and Wyoming-Nebraska state lines to a point immediately north of the main line of the Union Pacific Railroad from Omaha to Ogden, Utah; thence via an airline westward immediately north of said line of the Union Pacific Railroad to a point immediately north and west of Cheyenne, Wyoming; thence via an airline southward immediately west of Greeley, Denver, Pueblo, Trinidad, and other so-called Colorado common points, and thence via an airline across the state of New Mexico to El Paso" (144 I.C.C. 629).

¹² E.g., as of June, 1930, there were 63 origin groups in Florida, and the rail freight rate per standard box to Chicago ranged from 79.5 cents from the Group 1 origins (such points as Jacksonville) to 132 cents for the Group 63 origins (such points as Key West) (see Marvin A. Brooker, *A Study of the Cost of Transportation of Florida Citrus Fruits with Comparative Costs from Other Producing Areas* [University of Florida Agricultural Experiment Station Bull. 217 (Gainesville, June, 1930)], pp. 42-44).

¹⁰ See Nephthune Fogelberg and A. W. McKay, *The Citrus Industry and the California Fruit Growers Exchange System* (United States Department of Agriculture, Farm Credit Administration Circ. C-221 [Washington: Government Printing Office, June, 1940]), pp. 72-74.

stamp principle of rate-making, the shipper of California oranges needs only to compare prices at different markets in relation to possible additional refrigeration expenses or the likelihood of any physical deterioration in the product above that already present before deciding whether or not to divert the shipment.¹³

Shippers of Florida oranges, in every case of contemplated diversion, must consider not only these expense factors but the additional rail freight cost involved as well (usually the difference between the respective through rates applicable to the original and the new destination).¹⁴ The net effect for Florida shippers is the "discouraging of diversions and causing Florida shippers to hold a large proportion of their shipments to the regular trade channels."¹⁵ This would be particularly true in those "zones of indifference" where the Florida rates were the approximate equal of the California rates.

Some idea of the relative levels of the California and Florida rail freight rates may be had from Table 58 and Figure 9, showing index numbers of freight rates for a standard box from eighteen shipping-points in each state to nine markets.¹⁶ The first observation to be made is that the freight-rate structure for California oranges has been considerably more stable than for Florida oranges,

particularly since 1928. Since January, 1901, there have been eighty-four changes made in the Florida rates, fifty of which have occurred since 1928. For the same period, there have been but eighteen changes in the California rates, and half of these date from 1928. Up to the 1923-24 season the levels of rates

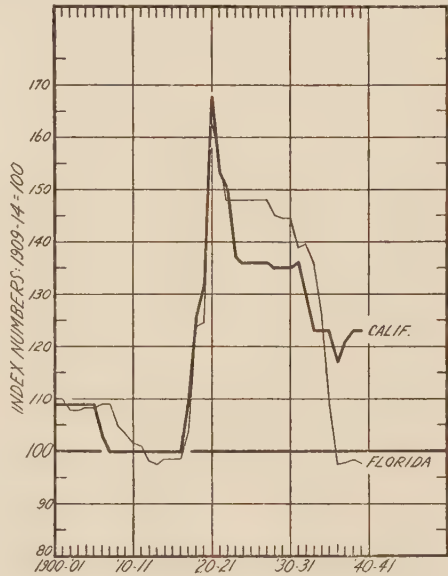


FIG. 9.—Index numbers of freight rates on citrus to nine destinations from eighteen California and Florida shipping-points, 1900-1901 to 1939-40.

from the two producing states were in rather close agreement except for the 1906-7, 1907-8, 1908-9, 1917-18, and 1919-20 seasons. For thirteen seasons the difference between the index numbers never exceeded 1.5 points in favor of either shipping state. Beginning in 1923-24 and continuing through the 1934-35 season, the level of California rates was markedly below that for Florida. During these twelve seasons the differences fell below five points on only two occasions.

As early as December, 1932, and particularly since the last half of 1935, as far as the markets included in the index

¹³ From 1924 to 1927, however, an extra terminal fee of 3 cents per 100 pounds was applicable on shipments of citrus fruits from California destined east of the Hudson River (*ibid.*, p. 47).

¹⁴ In addition, shipments consigned first to Buffalo or Pittsburgh can later be diverted only upon payment of the local freight rate applicable from either market to the new destination (*ibid.*, p. 50).

¹⁵ *Ibid.*

¹⁶ Atlanta, Boston, Chicago, Denver, Memphis, Minneapolis, New Orleans, New York, and Philadelphia.

numbers were concerned, Florida rail rates were revised downward drastically in order to meet both motor-truck and water competition. For example, effective July 17, 1940, the freight rates by rail from Jacksonville, Fort Pierce, and Tampa to New York were 45.9, 50.8, and 55.8 cents per standard box, respectively, while at the same time the corresponding

intermarket price differentials.—As a last part of the analysis of the spatial competition of auction markets, it has been possible to relate the intermarket price differentials to freight-rate differentials in order to indicate the extent to which the price differential either does or does not absorb the differential freight-rate burden. Since all markets east of Denver are assessed identical rates for shipments of California oranges, freight rates could not be treated as one of the factors explaining the existence of intermarket price differentials. For Florida oranges it has been possible to compare the differences in seasonal average prices between Chicago and New York, Philadelphia, and Boston with the respective rail freight-rate differentials existing for the same seasons. The results of these comparisons are to be found in Table 59 and Figure 10.

Although there was, in every case, a direct relationship between the course of movement of price differentials and freight-rate differentials since 1926-27, several examples of maladjustment are to be noted. In the first place, the season 1927-28 for New York and the season 1929-30 for Boston and Philadelphia represented periods when the price differentials were far out of line with the comparative rail freight-rate costs. And, second, despite the fact that freight rates on Florida oranges moving to the Chicago market were higher than for similar movements to New York, prices realized on the Chicago auction were not higher for every season. However, as the freight-rate disadvantage of Chicago increased, prices tended to become higher there than at the New York auction.¹⁸

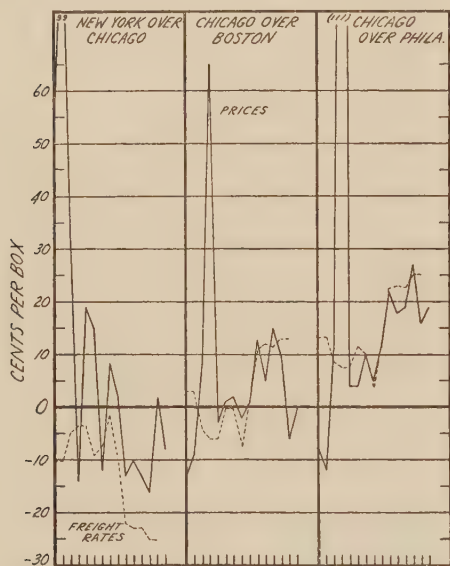


FIG. 10.—Relationships between price and rail freight-rate differentials for Florida oranges, Chicago and three competing auctions, 1926-27 to 1940-41.

rates for an all-water movement were 46, 50, and 55 cents.¹⁷ As a result, the level of Florida rates to the nine markets fell below the level of California rates by as many as twenty-five points during the next five seasons. Undoubtedly, these low levels of freight rates for Florida oranges, equaled only during the 1912-13 to 1916-17 seasons, have been a strong factor in pushing prices paid for these oranges to extremely low levels.

The relation between freight rates and

¹⁷ C. V. Noble, "Transportation of Florida Citrus Fruits," *Citrus Grower*, September 27, 1940, p. 4.

¹⁸ It should be mentioned here that freight rates for Florida oranges declined more rapidly for rail movements to those markets where rail and truck competed in the movements or where rail, truck,

Despite these maladjustments, the following favorable relationships were found to exist. There has been an increasingly closer balance, as was stated, between New York-Chicago price and freight-rate differentials since 1932-33. For Boston in comparison with Chicago, the relationships of prices and freight rates have been most satisfactory since 1930-31, with the particular exception of the 1939-40 season. During seven of the seasons analyzed the differences between the average price differential and the freight-rate differential did not exceed $3\frac{1}{2}$ cents per box. For Philadelphia in comparison with Chicago, the balance has been satisfactory since 1932-33, with the exception of the 1936-37 and 1939-40 seasons. If these two seasons are excluded, the average price differentials never deviated from the freight-rate differentials by more than 3.8 cents per box.

Since freight rates on California shipments remain constant to all markets

and water instrumentalities competed than for movements to markets not served to any great extent by these competing forms of transportation. For example, the rate per standard box to New Orleans during the 1939-40 season was only 39.5 cents compared with 85.2 cents in 1926-27, while for Chicago the comparable costs were 85.6 and 107.2 cents.

east of Denver, freight-rate differentials cannot be used to explain the amount of price differences between competing auctions. Even in the case of Florida oranges, it was observed that freight-rate differentials were not altogether satisfactory in explaining the size of the inter-market price differentials. It would seem, therefore, that a full explanation would have to include, in the analysis for each set of markets, such factors as

(1) the quantity sold on the market; (2) the remainder of the supply available outside of the market, but capable of diversion in any quantity to the specific market; (3) some measure of purchasing power in the specific market, such as the income of industrial workers; (4) the supply of competing fruits available in the specific market; and (5) other factors of similar nature which have not been stated adequately as yet in statistical terms.¹⁹

Some of the component parts of the last factor would have to include analyses of the role played in price movements by brand and size preferences.

¹⁹ Kelsey B. Gardner, *Terminal Fruit Auctions as Marketing Agencies for Farmers' Cooperatives* (United States Department of Agriculture, Farm Credit Administration Bull. 29 [Washington: Government Printing Office, 1938]), p. 35. This authority points out that, in studies made by him, the first four groups of factors accounted for about 88 per cent of the variations in the monthly prices of California Valencias at particular auction markets.

CHAPTER VI

PROBLEMS IN PRICE-STRUCTURE ANALYSIS

IN ORDER to make clear the writer's understanding of the structural concept of price, an attempt will be made to examine the complex nature of the component elements in price-structure analysis as revealed by this study in order to establish perspective. In this connection one objective in particular

will be to show that the price structure for oranges is itself composed of several subordinate structures. A section will be devoted to some of the problems of methodology involved in price-structure research.¹ It is felt necessary, also, to

¹ The insertion of the methodological question in this chapter rather than in the first chapter is

deal somewhat more explicitly with the role that institutions play in the formation and operation of price structures. In order to widen the use of this study and to relate a rather narrow field of investigation to the reader's more general economic and marketing interests, it was thought advisable to illustrate some of the ways in which a study of this type might be applied.

A REVIEW OF THE COMPLEX NATURE OF THE PRICE STRUCTURE FOR A PARTICULAR COMMODITY

From a marketing viewpoint commodities vary with respect to the degree of complexity of their respective price structures. A list of the forces which are at work to affect this degree of complexity must necessarily include the following. Commodities with multiple uses seem to be characterized by more complex structures than those commodities with but a single important use or with few important uses. Furthermore, the type of selling base appears definitely to affect the nature of the price structure. On the one hand, those commodities sold on the basis of personal inspection by buyers or their marketing representatives give rise, because of these types of transactions, to price quotations which are highly unstandardized, except where attempts have been made to establish grading of the commodities on a commonly accepted basis (either by gov-

ernment authorities, members of the commodity group, or both). On the other hand, selling and buying transactions involving commodities sold on the basis of description or samples—buyer's, seller's, or those of some outside source—give rise to more "systematized" prices based on more widely accepted qualitative standards.

The susceptibility of a product to factors affecting consumers' demand evaluations, such as branding by shippers and producers; variations in the physical size; the use of containers as opposed to shipment in bulk, together with variations in the types of containers when used; the use, in addition to containers, of individual inner wrappings or special containers per sales unit; and the presence or absence of the use of advertising as a sales tool—all these factors increase the complexity of the analysis.

Moreover, the wider the geographical area of distribution and the more numerous the types of wholesale and retail middlemen involved in that distribution, the more complex will be the price-structural elements. Similarly, the greater the number and types of markets utilized, the more complicated will become the resulting study. The presence of both cash and futures transactions will operate to affect the price structure in a similar manner. A greater degree of complexity is introduced, also, with longer marketing seasons and with larger volumes of commodities to be marketed during such seasons. Again, a highly competitive market and a very elastic demand for a product increase the number of component elements in the price structure which may have to be studied. And the more the marketing of a particular commodity is subjected to legislative control or to programs of governmental experimentation, the more difficult will it be to

based upon a conflict in point of view between classicists and institutionalists in economic theory (in this connection see two later sections in this chapter: "The Problem of Methodology in Relation to Price-Structure Analysis" and "The Role of Institutions in Price-Structure Analysis"). The classical economist, in effect, might pose the following question: "Why did you not approach the problem of analyzing the price structure for oranges by studying your data on the basis of the principles of orthodox (classical) economics; that is, in terms of supply-and-demand-curve analysis?"

describe, in simple terms, the nature of the price structure for that product.

Chapters i-v have attempted to present a cross-sectional view of the complex nature of the entire wholesale price structure for oranges in terms of the detailed study made of that part of it arising from the price-making operations of the Fruit Auction Sales Company at Chicago. Two viewpoints were apparent in the results derived: to present a detailed vertical picture of the structural situation at Chicago considered apart from any other geographical area and to consider the interrelationships introduced when the pricing activities of competing auctions in other markets were considered. The limitations of the analysis were indicated in the respective chapters and, once more, are recognized here.²

Chapter i dealt specifically with the general marketing functions of the Fruit Auction Sales Company at Chicago. Three measures were introduced to establish the relative importance of this auction as a price-determining market for all wholesale operations at Chicago. As a basis against which to measure the auction's importance, the total volume of sales at that market from 1928 to 1940 was broken down to show trends by varieties and by principal states of origin. Generally, Florida oranges have increased in volume on the Chicago wholesale markets at the expense of California Navels, while California Valencias have shown little relative tendency either to increase or to decline. Since 1937, Texas oranges have become of some importance. Against this changing picture of total supply, it was established, first, that a declining volume of oranges as a proportion of the total supplies was sold

on the auction, owing principally to the increasing amount of direct purchases and deliveries effected by the corporate chain stores. This does not, however, indicate the auction's declining importance, for the chains base their f.o.b. prices on the general prices realized on the auction at any period. Sales data were treated, second, to show the overwhelming domination of the California supply sold on the auction by the California Fruit Growers Exchange and the much smaller control of the Florida supply by the Florida Citrus Exchange. An analysis was made, finally, of the nature of the selling and buying interests on the auction market.

In chapter ii the structure of long-run prices was presented in terms of all varieties of oranges combined and in terms of the principal component varieties—California Navels, California Valencias, California miscellaneous varieties, and the various types of Floridas—in order to give an intensive view of one segment of the complete wholesale price structure. For each of these varieties, price and volume of sales data were presented in terms of the value of the fruit sold, unit values per box, the grade of the fruit sold, prices in relation to the physical size of the fruit, and the prices realized by the California Fruit Growers Exchange, the Florida Citrus Exchange, and their respective competitors. The data of Florida oranges were broken down further to show the relationships for such component varieties as the Indian Rivers, Round, Pineapple, and Valencia. Because there was a change in the type of container used, the data for Florida and Texas oranges were segregated to show the effect of the type of container on the prices realized. Finally, prices were compared for Florida and California oranges to show intervarietal

² For a statement of some reasons why such limitations were introduced see chap. i.

premiums according to state of origin, grade of fruit, size of fruit, and the influence of the leading co-operative marketing association in each shipping state.

Many of the differentiating factors considered in presenting the cross-sectional view of the long-run price structure were extended to show the nature of the month-to-month (seasonal) price structure. Two special measuring sticks were introduced in this connection: indices of seasonal variation in prices per box and quantities of sales and indices of the variability of monthly prices. These component parts of the seasonal price structure were presented in chapter iii.

In chapter iv a similar type of analysis was applied to a more detailed cross-sectional treatment—the short-run price structure. And here, as in the preceding chapter, a new element of analytical treatment was introduced. Daily price data, broken down by the principal varieties, were studied in order to show the influence of shippers' brands on the level of prices realized. An attempt was made to indicate the consistency with which particular brands dominated the auction sales and to show the ability of particular brands to command price premiums. Finally, the flexibility of the daily prices was measured by indices of daily price variability.

Finally, chapter v presented the price structure at the Chicago auction in relation to the price structures at nine competing auction markets for each of the important supply states. The data at hand were sufficiently detailed to permit the analysis to be made in terms of both a short-run and a long-run relationship. Price differentials were studied in order to reveal the existence of short-run and long-run equilibriums in the intermarket price relationships. An attempt was

made as well to measure the extent to which the price differentials were the result of the freight-rate structure.

In this summarizing section an attempt to picture as concretely as possible the entire price structure for oranges should be of some value. In the absence of a more satisfactory system of presenting several different elements in a single chart, the reader might visualize three figures which subdivide the presentation into the three different parts of the complete price structure for oranges, holding the element of time constant. In the first of these hypothetical figures the vertical aspect of the price structure would be presented as the oranges move from the producer to the ultimate consumer. The following points of importance should be noted. In the producing regions the price structure is the resultant of competition between the several producing regions, California-Arizona, Florida, Texas, and "all others." And the range in prices, classified according to such factors as physical size, botanical varieties, brands and grades, and types of containers, is related not only as between producing regions but as between individual producers in each area as well.

As the product moves closer and closer to the ultimate consumer, the price per box (in terms of a range to reflect the influence of the factors mentioned) increases in order to provide margins for the additional wholesale and retail middlemen involved (as payments for their services) and for additional auxiliary services performed in connection with the buying and selling operations (as, for example, transportation and storage). This cross-section, static in nature, conceals, of course, the normal bell-shaped frequency distributions of the various prices by sizes, and the like, as well as the changing relationships introduced by

the dynamic aspects of all economic phenomena.

In the second chart the price structure for oranges would be pictured in a spatial manner, arising from the concept of a spread between prices at competing markets arranged according to proximity to a particular producing region and the type of transportation instrumentality considered. To state the same relationships in a somewhat different way, the spreads are arrayed on one plane on the basis of freight-rate differentials, excluding the variations from a "normal" relationship introduced by variations in the composition and importance of the particular supply-and-demand factors operating at the various competing markets. No graphic way could be found to portray, in any co-ordinated fashion, differences in the interrelationships of prices for oranges at competing markets due to varying size assortments, differences in the relative importance of the several botanical varieties, varying proportions of brands and grades offered for sale, the types of containers used, variations in shipping costs from competing regions, the presence or absence of the auction method of selling in addition to private sales (as well as the different proportions accounted for by auction sales in the markets where utilized), and variations in the elasticity of the consumers' demands as reflected by differing income distributions and associated factors. Moreover, there is no means of portraying the dynamic effect on these factors of changing social and environmental conditions as reflected in the time factor.

Finally, in the last of these hypothetical figures, an attempt would be made to picture, at a moment of time, the relationships between the price structure for oranges and the price structures for all other goods and services; that is, a spe-

cific price structure is related to the elements in the general price structure. Three levels of relationships would be recognized in this figure: (1) that between the price structure for oranges, on the one hand, and all those unprocessed agricultural commodities, on the other hand, which are both directly and indirectly competitive with that; (2) the same type of relationship involving, this time, those processed food products which are either directly or indirectly competitive in nature; and (3) that relationship existing between the price structure for oranges and the price structures for all other goods and services not included in the first or the second set of relationships.³ And again in this connection certain factors have had to be excluded: the operations of the time factor; the failure to include in the relationship the various levels of marketing activities (as wholesale or retail); and, within such levels of marketing activities, the various types of organized and unorganized markets.⁴

THE PROBLEM OF METHODOLOGY IN RELATION TO PRICE STRUCTURE ANALYSIS

"Who knows how many young minds have succumbed to ravages of Methodology? Perhaps more than there have

³ This would include interrelationships with the price structures for other consumers' goods, for producers' goods, for services, and for the prices of business enterprises (see W. C. Mitchell, *Business Cycles: The Problem and Its Setting* [New York: National Bureau of Economic Research, 1927], pp. 108-16).

⁴ It should be noted that this problem could be handled perhaps by a series of supply-and-demand curves. For example, the demand curve for California Valencias at the shipping-point could be shown as a relatively inelastic curve, assuming that the demand for the product at the consuming markets was somewhat elastic and that freight rates, in terms of their absolute amounts, were somewhat inflexible in their changes.

been wasted on wrong methods."⁵ This overabsorbing question of methodology affects this study to the extent that the approach taken by the author seems to fall between institutionalism, on the one hand, and classical economics, on the other. It will not be the purpose here to consider once more the relative merits of induction versus deduction and their joint relations to scientific method. Nor can a study of this nature hope, in a few pages, to answer in a definitive way problems of scientific method as yet unanswered in more specialized and authoritative sources. But the whole question of methodology could not be overlooked merely because this study does fall somewhere between the methods of institutionalism and classical economics.

To begin with, it seems perfectly clear (to the author, at least) that institutional economics bases its results almost completely upon the use of methods which are not peculiarly its own; that is, the use of description and the presentation of data in quantitative categories.⁶ But these tools are not used exclusively; they are coupled with a method of study which attempts to show the evolutionary content of economics, particularly as a resultant of the accumulation of forces operating in the past. This central idea of genesis based on a preceding accumulation of forces is important to institutionalism and is considered by some persons to be the particular method contributed by that school of economic thought.

Many criticize institutional economics on the ground that it lacks a formal inductive framework, an organized body

of hypotheses, to which to attach its results. This school of economic thought is presumed by many to be opportunistic in that it grasps at any method and uses any material that will point up the evolutionary and dynamic nature of economic change. Each piece of analysis creates an isolated case study which cannot be related to every other institutional study because the ideological backbone is entirely lacking.⁷ Classical economics, by inference, classification, abstraction, and by the use of other techniques of the scientific method, creates a system of reasoning in which order is present and in which *probabilities* of occurrences and relationships may be definitely established.

And yet, as the next section will show, man's economic activities take place not in a vacuum but rather in relation to institutional structures which themselves react on and affect the very nature of these economic activities. If abstractness has the merit of establishing order among phenomena which at first glance appear to be separated from one another, then the illustration and qualification of such order by means of description—both qualitative and quantitative—would seem to have the merit of being an indispensable accessory. The sharp point of difference between classicists and institutionalists hinges around the value of that accessorial relationship for economics.

The Social Science Research Council has been conducting investigations into the more significant researches in the field of the social sciences.⁸ All through the course of the investigation of Mills's

⁵ J. Marschak, "A Discussion of Methods in Economics," *Journal of Political Economy*, XLIX (June, 1941), 441.

⁶ Paul T. Homan, "Economics: The Institutional School," *Encyclopaedia of the Social Sciences*, V (New York: Macmillan Co., 1931), 387-92.

⁷ Some would say, undoubtedly, that this development of a series of cases is the heart of research in institutional economics.

⁸ See Raymond T. Bye, *Critiques of Research in the Social Sciences. II. An Appraisal of Frederick C. Mills' "The Behavior of Prices"* (Social Sciences

The Behavior of Prices, the differences in ideas between the institutionalists and the classicists, and between the use of induction as opposed to deduction, were basic in preventing the inquiry from taking a much more positive approach. The classicists bemoaned the fact, for example, that, while Mills in his study was searching for order among prices, he failed to set up a hypothesis within the framework of economic theory (classical), and, by emphasizing the institutional aspects of price behavior, he succeeded, apparently, in finding evidences only of the lack of order.⁹ The heart of the criticism was that the conclusions of studies are bound to be disappointing when such studies fail to base techniques and procedures on the proposition of finding out "what questions to ask."¹⁰

But the problem is not so simple as such a statement would seem to make it. In general, all who participated in the evaluation of Mills's work seemed to agree that both inductive and deductive methods are necessary in economic research.¹¹ The basic issue is better stated in the following quotation:

Are there among the "thousand causes" which influence the price of a commodity some few particularly strong ones which work according to some uniform relationships? Or are such causes and relationships (which might be called "systematic" in contradistinction to the remaining "random" ones) absent in the field of prices? If their presence is proved, or suspected, they must be made use of in the hypotheses which the investigator has to test. . . . If, on

the other hand, systematic relationships are altogether absent, or are not likely to exist, the investigation, while still questing for causes, has to deal only with aggregates of unidentifiable random causes. These aggregates may have their own forms and regularities, which may be disclosed by the frequency distributions of the observed effects.¹²

It has been said that the approach in the present study lies somewhere between the institutional and the classical schools. There is no question that the study is institutional in its use of descriptive and quantitative categories to establish the evolutionary aspects of the auction-selling of oranges. Yet the use of this methodology was based upon hypotheses pointing to the existence of a definite organizational order in the marketing field. And there was no lack of attention paid to certain fundamental hypotheses originating in classical economics. Many of the features characterizing the auction price structure are basic subject matter for supply-and-demand analyses. Throughout this study the investigation of the price data was directed toward the discovery of indicators of order in terms of short-run, intermediate, and long-run equilibriums which are themselves basic to classical thought. While these were biased toward emphasizing certain institutional characteristics, yet it cannot be said that indicators of sales volume, size preferences, brand and quality preferences, and varietal preferences, to mention but a few, fail to consider supply-and-demand factors. Every attempt was made, furthermore, to discover the existence and to describe the nature of the spatial equilibrium by considering price relationships between competing auction markets in terms of rail freight costs.

It would be well to repeat here some-

Research Council Bull. 45 [New York: Social Science Research Council, 1940].

⁹ Jacob Viner, "Review of *The Behavior of Prices*," *Quarterly Journal of Economics*, XLIII (February, 1929), 337-52. This review is reprinted in the Bye study on pp. 165-80.

¹⁰ *Ibid.*

¹¹ Read Bain, "Commentary on the Mills-Bye Conference," in Bye, *op. cit.*, pp. 300-320.

¹² Marschak, *op. cit.*, p. 443.

thing said in the opening chapter. The author has been experimenting (with Professor E. A. Duddy of the University of Chicago) with the possibilities of developing and utilizing a "structural approach" in teaching a beginning course in the elements of marketing. Here was a chance to study a particular case of structural development for a commodity embodying sales by inspection and description in the auction market, using data of prices and volumes of sales which were considerably more reliable than similar data at hand for many other commodities. Certainly, there is greater evidence of order than of chaos found in the interrelationships of the data analyzed. The result is a combination of organizational control and co-ordination through the market whereby a particular category of need for a consumers' good is more rather than less satisfactorily fulfilled.

No effort has been made to prove that the order found is perfect and continuous. But one writer on science and scientific method points out that anything that happens in the universe is unique in that there is never an *identical* repetition of that occurrence.

Individual phenomena can only be classified, and our problem turns on how far a group or class of like, but not absolutely, same things which we term "causes," will be accompanied by or followed by another group or class of like, but not absolutely same, things which we term "effects." . . . If the "causes" have such and such a degree of likeness, how like will the "effects" be?¹³

The important thing, after all, for research of this type is that there should be a significant amount of such order present. For, as one of the better thinkers in the field points out, the lack of order, when it occurs, is due principally to the

existence of "erratic social irrationality."¹⁴ The same author goes on to point out that "the disturbing social effects of the inadequate solutions that individuals obtain of their economic problems result from the fact that many of the inadequate individual solutions do not and never will 'cancel out.'"¹⁵

The value of this study, then, from a methodological point of view includes two things: (1) it has attempted to fit its approach within certain hypotheses of classical economics even while emphasizing institutionalism and (2), by making every effort to show exactly how much "orderly behavior" actually takes place, a study of this kind serves to supplement other investigations which are primarily concerned with what *would* happen if certain hypothetical conditions obtained. It is hoped that by supplying such supplementation this study succeeds in increasing our stock of knowledge both for forecasting and for control purposes. Order among phenomena becomes valuable because of what it contributes to our knowledge of the probability of certain occurrences.¹⁶

THE ROLE OF INSTITUTIONS IN PRICE STRUCTURE ANALYSIS

The conflict between classical and institutional economics in presenting an analysis of price structures justifies further treatment of the place occupied by institutions particularly in relation to price-making forces. From an economic viewpoint, institutions reflect

¹⁴ Frederick R. Macaulay, *Some Theoretical Problems Suggested by the Movement of Interest Rates, Bond Yields, and Stock Prices in the United States since 1856* (New York: National Bureau of Economic Research, 1938), Introduction, pp. 8-23.

¹⁵ *Ibid.*, p. 12.

¹⁶ In this connection see Frank H. Knight, *Risk, Uncertainty and Profit* (Boston: Houghton Mifflin Co., 1921), chaps. i and vii.

¹³ Karl Pearson, *A Grammar of Science* (London: A. & C. Black, Ltd., 1911), p. 157.

steps taken by individuals to set up and to operate organizational activities in order better to accomplish the end of want satisfaction.¹⁷ It may be stated as a truism that if unorganized action would yield proportionately effective results in want satisfaction, no attempts would be made to set up organized activity. Generally, any particular institution is based upon and must depend for its existence upon the functionings of one or more other institutions.

From an evolutionary standpoint, institutions tend to become both more numerous and more complex. As they increase in number and complexity, they reflect the impact upon themselves of specialization of function. For example, at a given stage of development in marketing, the small-scale, full-function independent store was the dominating type of retail institution, as was its counterpart, the orthodox wholesaler, in the wholesale markets. Later, with the increasing urbanization of the population, among other changes, there arose a need for a type of retail unit which, to a much greater degree, would use division of labor and house a wide variety of merchandise. The result, institutionally, was the department store. This is not to say that the evolution of the department store was a planned and completely rational development. Such institutional developments may be established accidentally, arbitrarily, deliberately, or consciously. But, regardless of the presence or absence of planning, it is assumed here that the newer retailing institution became firmly fixed, ultimately, because it has proved to be better adapted to the times.¹⁸

¹⁷ For a general treatment of institutions see Walton H. Hamilton, "Institutions," *Encyclopaedia of the Social Sciences*, Vol. VIII (New York: Macmillan Co., 1932).

¹⁸ *Ibid.*

As a further example, the diversification of consumers' interests within urban communities ultimately gave rise to a need (expressed or latent) by many for more impersonal service and streamlined functions on the part of those who catered to their everyday needs, thus furnishing once more an evolutionary base for a new institution, the corporate chain store.¹⁹ Finally, the competitive reply of the orthodox independent retailer was aimed in two directions: legislative, a negative approach resulting in certain changes in the wholesale and retail price structures; and institutional, resulting in the voluntary chain and the supermarket.²⁰

Both from the supply and the demand side, individuals as producers or consumers express their price decisions in an environment of such things as the mazes of usages, traditions, formal and informal controls, that are at the heart of institutional organization and which become crystallized in a price. And, because this is so, the institutions themselves create a peculiar set of structural elements within the confines of the general price level (the over-all price structure) for any particular category of goods. Some institutions reinforce and expand the competitive elements in the price structure as indicated in the preceding paragraph; other institutions, emphasizing such things as services and

¹⁹ From one point of view, the chain store may be looked upon as an institutional evolution designed to increase the degree of freedom of choice open to the consumer. If it can be said that a great deal of modern advertising has as its foundation the purpose of increasing the degree of nonprice competition, then it must be admitted that the evolution of institutions such as the chain store, with their price appeal expressed in a good deal of lineage and time devoted to price advertising and private-brand competition, serves to counteract such a tendency.

²⁰ Note that the corporate chain, in turn, has adapted this competitive supermarket principle very successfully to its own use.

strong brand preferences, prefer to steer away from emphasis on price competition in favor of product differentiation. As the variety of institutions expands in order to adapt the organizational setup to the exercise of freedom of choice by individuals, the ramifications of the existing price system for the products involved likewise expand. Moreover, developments in communication and transportation cause such ramifications to expand spatially.

In summarizing this relationship between institutions and price structures, the following excerpt is pertinent:

Nor are the general laws of economics "institutional." They work in an institutional setting, and upon institutional material; institutions supply much of their content and furnish the machinery by which they work themselves out, more or less quickly and completely, in different actual situations. Institutions may determine the alternatives of choice and fix the limits of freedom of choice, but the general laws of choice among competing motives or goods are not institutional—unless rational thinking and an objective world are institutions, an interpretation which would make the term meaningless. Economic activity consists in the use of certain resources by certain processes, to produce "wealth." The content of the concept wealth is largely institutional, and the resources available and processes used at any place and time for producing wealth are in a sense historical products; but there are general laws of production and consumption which hold good whatever specific things are thought of as wealth and whatever productive factors and processes are used.

For illustration we may consider the assertion commonly made even by economists who do not recognize the function of general laws, that the way to understand price fixation is to study the machinery and processes of marketing. The mode of organization of the market may indeed have a great deal to do with price, and that in at least two ways. It brings the buyers and sellers of the goods more or less perfectly into communication with each other, furnishing the channels through which the real price-fixing forces, the facts of demand and supply, work out more or less freely and effec-

tively to a determinate result. In addition, what we call marketing machinery and organization includes a large element of direction of energy into manipulation of demand, creating real or fictitious qualities in the goods marketed, through true or false information, or through mere psychological compulsion in the form of suggestion and exhortation. In so far as these things are present and operative, they are, of course, present and operative; but they do not affect the fact that in the large the conditions of supply and demand determines the prices of goods. Other considerations produce aberrations from the result of perfect intercommunication among buyers and sellers who know the goods and their wants, but they are to be understood only as producing *aberrations* from the fundamental tendency and hence in subordination to it. They are of the nature of friction, divergences of material from conditions taken as a standard, and the like, in the workings of the law of mechanics in actual machines.

There is a close analogy between theoretical economics and theoretical physics. Both treat of the relations between cause and effect, between force and change, without reference to the question of what forces may actually be at work in any particular case or what effects it may be desirable to produce. In both fields, the *application* of the principles does depend precisely upon those questions of the particular ends in view and means at hand, and upon all the conditions present. But the application of principles is impossible without principles to apply. It is no argument against the practical value of pure theory that taken alone it does not yield definite rules for guidance. . . .

The laws of economics are never themselves institutional, though they may relate to institutional situations. Some, as we have observed, are as universal as rational behavior, the presence of alternatives of choice between quantitatively variable ends, or between different means of arriving at ends. Others are as universal as "organized activity," independent of the form or method of organization. A large part of the extant body of economic theory would be as valid in a socialistic society as it is in one organized through exchange between individuals. Still others cover behavior in situations created by even more special institutional arrangements, as for example the differences in business conduct created by the custom of selling goods subject to cash discounts or by the existence of a branch banking system as con-

trusted with independent banks. Each law is universal in the field to which it applies, though it may not give a complete description of the cases which it fits. . . . ²¹

POSSIBLE APPLICATIONS OF THE STUDY

Up to this point the general reader may have wondered how the detailed analysis of the price structure for one product could be applied so as to give it perspective and, at the same time, permit his thinking to operate in more familiar surroundings. It will be the purpose of this last section to supply a few examples of such possible applications.

In the first place, the author believes that the results of this study can be used by the Bureau of Labor Statistics in revising its methods of compiling data for certain agricultural products used in constructing its index numbers of wholesale prices. The nature of the problem can best be indicated in the form of a series of questions. Can average prices at a single auction market for a single day during the week serve adequately as a base from which to measure relative price changes? Or should quotations be gathered for every market day and then be reduced to weekly averages? Do day-to-day variations in size assortments affect the comparability of relative price changes? And do similar variations in the brands and grades on hand for sale have like effects? How shall changes in the proportions of sales by states of origin be reflected in the price data collected? And should recognition be given to changes in the proportion of a market's total supply of oranges sold on the auction?

The analysis of the data contained in chapter i points to a second important

application—a more complete study of the growth and present position of agricultural co-operative marketing associations as price-controlling institutions. Are they equally interested with other institutions in maintaining competitive conditions in organized wholesale markets for agricultural products? Or are they equally influential in increasing the amount of rigidity and the importance of product differentiations in pricing activities?²² And, in this connection, what is the relation of advertising to the price-controlling position of the co-operatives? Should the activities of these producer and shipper co-operatives be integrated with the activities of the consumers' co-operatives, or are their respective interests diametrically opposed?

Another field of application concerns the analysis of the supply-and-demand characteristics of oranges and the competition between oranges and other fresh fruits and canned fruits and fruit juices. Here, however, some beginnings have already been made.²³

²² Thurman Arnold recently conducted an investigation of the California Fruit Growers Exchange, the Florida Citrus Exchange, and the fruit auction companies of the United States, charging that they had conspired to control auction prices.

²³ The reader is referred in particular to the following: W. E. Black, "Home Consumption and Expenditure for Apples: 345 Families, Syracuse, New York, 1939-40 Season," *Farm Economics*, No. 127 (November, 1941), pp. 3196-97; Sidney Hoos, "An Investigation on Complementarity Relations between Fresh Fruits," *Journal of Farm Economics*, XXIII (May, 1941), 421-33; M. P. Rasmussen, Ford A. Quitslund, and Edwin W. Coke, *Competition between Fruits at Retail, New York City, November, 1939 (Preliminary)* (United States Department of Agriculture, Farm Credit Administration, Cooperative Research and Service Division, Misc. Report 30 [Washington, December, 1940]), "Sales of Fruits at Retail, New York City, March, 1940" (United States Department of Agriculture, Farm Credit Administration, Cooperative Research and Service Division, Misc. Report 32 [Washington, March, 1941]), and "Some Facts concerning Compe-

²¹ Frank H. Knight, "The Limitations of Scientific Method in Economics," *The Ethics of Competition* (New York: Harper & Bros., 1935), pp. 137-39.

Finally, some application of the study could be made to the problem of prorating, both by government and by

private control, of shipments of agricultural and nonagricultural products among the existing markets.²⁴

tition between Apples and Other Fruits at Retail, New York City, August, 1939" (United States Department of Agriculture, Farm Credit Administration, Cooperative Research and Service Division, Misc. Report 23 [Washington, September, 1940]); J. M. Thompson, *The Orange Industry: An Economic Study* (University of California, College of Agriculture, Agricultural Experiment Station Bull. 622 [Berkeley, June, 1938]); and H. R. Wellman, *Some Economic Aspects of Regulating Shipments of California Oranges* (University of California, College of

Agriculture, Agricultural Experiment Station Circ. 338 [Berkeley, January, 1926]).

²⁴ For work already done in this field see Mordecai Ezekiel, "A Statistical Examination of the Problem of Handling Annual Surpluses of Non-perishable Farm Products," *Journal of Farm Economics*, XI (April, 1929), 193-226; Frederick V. Waugh, Edgar L. Burtis, and A. F. Wolf, "The Controlled Distribution of a Crop among Independent Markets," *Quarterly Journal of Economics*, LI (November, 1936), 1-41; and Wellman, *op. cit.*

APPENDIX

TABLE 8
ANNUAL AUCTION SALES (IN BOXES) OF ORANGES
AT CHICAGO, BY STATE OF ORIGIN, 1928-40*

Year	California and Arizona				Florida	Texas and Others	Total
	Navels	Valencias	Misc.	Total			
1928	939,606	751,732	46,477	1,737,815	226,981	511	1,965,307
1929	1,199,271	1,168,839	419	2,368,529	316,158	1,131	2,685,818
1930	874,510	746,881	22,787	1,644,178	348,478	3,659	1,996,315
1931	946,729	963,472	6,301	1,916,502	393,543	2,517	2,312,562
1932	818,767	885,149	5,405	1,709,321	303,457	7,415	2,020,193
1933	607,648	820,082	7,053	1,434,783	365,082	3,202	1,803,067
1934	784,360	683,792	3,807	1,471,959	436,480	1,666	1,910,105
1935	708,289	962,226	45,350	1,715,865	374,880	.....	2,090,745
1936	697,592	697,655	11,185	1,406,432	393,925	.....	1,800,357
1937	539,092	646,457	13,176	1,198,725	524,672	25,864	1,749,261
1938	548,765	821,496	8,108	1,378,369	568,308	54,826	2,001,503
1939	549,385	754,325	3,793	1,307,503	678,187	70,632	2,056,322
1940	703,011	906,499	37,521	1,647,031	354,863	59,378	2,061,272

* Sources: Chicago Fruit and Vegetable Reporter, Price-Realized Catalogues of the Fruit Auction Sales Company, and the Chicago offices of the California Fruit Growers Exchange and the Florida Citrus Exchange.

TABLE 9
PERCENTAGE COMPOSITION OF ANNUAL AUCTION SALES OF
ORANGES, BY STATES OF ORIGIN, 1928-40*

Year	California and Arizona				Florida	Texas and Others	Total
	Navels	Valencias	Misc.	Total			
1928	47.81	38.25	2.36	88.42	11.55	0.03	100.00
1929	44.65	43.52	0.02	88.19	11.77	0.04	100.00
1930	43.81	37.41	1.14	82.36	17.46	0.18	100.00
1931	40.94	41.66	0.27	82.87	17.02	0.11	100.00
1932	40.53	43.81	0.27	84.61	15.02	0.37	100.00
1933	33.70	45.48	0.39	79.57	20.25	0.18	100.00
1934	41.06	35.80	0.20	77.06	22.85	0.09	100.00
1935	33.88	46.02	2.17	82.07	17.93	....	100.00
1936	38.75	38.75	0.62	78.12	21.88	....	100.00
1937	30.82	36.96	0.75	68.53	29.99	1.48	100.00
1938	27.42	41.04	0.41	68.87	28.39	2.74	100.00
1939	26.64	36.57	0.19	63.40	32.88	3.72	100.00
1940	34.14	44.02	1.82	79.98	17.24	2.78	100.00

*Source: Table 8.

TABLE 10

ANNUAL UNLOADS OF ORANGES AND SATSUMAS AT CHICAGO,
BY STATES OF ORIGIN, 1924-40^a

Year	Calif. and Ariz. ^b		Florida ^c		Texas ^c		Other States ^c		Total	
	No. of Boxes	Per Cent	No. of Boxes	Per Cent	No. of Boxes	Per Cent	No. of Boxes	Per Cent	No. of Boxes	Per Cent
1924	1,504,734	82.64	315,000	17.30	.....	....	1,080	0.06	1,820,814	100.00
1925	1,388,772	78.92	342,160	19.44	.....	....	28,756	1.64	1,759,688	100.00
1926	1,215,552	75.84	367,367	22.92	.....	....	19,818	1.24	1,602,707	100.00
1927	1,585,122	78.20	400,680	19.77	.....	....	41,181	2.03	2,026,983	100.00
1928	1,798,104	83.95	326,625	15.25	.....	....	17,250	0.80	2,141,979	100.00
1929	2,404,710	83.87	398,412	13.90	756	0.03	63,126	2.20	2,867,004	100.00
1930	1,744,512	81.76	378,944	17.76	4,966	0.23	5,348	0.25	2,133,770	100.00
1931	2,304,664	81.62	488,950	17.32	1,540	0.05	28,490	1.01	2,823,644	100.00
1932	2,212,518	83.00	418,564	15.70	778	0.03	33,843	1.27	2,665,703	100.00
1933	2,013,396	79.47	517,974	20.45	1,179	0.05	786	0.03	2,533,335	100.00
1934	2,044,350	76.51	586,872	21.96	792	0.03	39,996	1.50	2,672,010	100.00
1935	2,372,370	82.46	491,200	17.07	13,200	0.46	400	0.01	2,877,170	100.00
1936	1,845,228	71.91	620,800	24.19	87,600	3.41	12,400	0.49	2,566,028	100.00
1937	1,445,136	60.44	798,800	33.41	130,800	5.47	16,400	0.68	2,391,136	100.00
1938	1,964,886	65.55	937,200	31.26	84,400	2.82	11,200	0.37	2,997,686	100.00
1939	1,652,112	54.46	1,276,800	42.09	100,400	3.31	4,400	0.14	3,033,712	100.00
1940	2,215,752	73.99	668,800	22.33	109,200	3.65	800	0.03	2,994,552	100.00

^aSource: Bureau of Agricultural Economics, United States Department of Agriculture (Chicago office). Excludes tangerines, 1931-40.

^bConverted on basis of 462 boxes per car.

^cConverted on basis of 360 to 400 boxes per car, 1924-35; 400 boxes, 1936-40.

TABLE 11

PERCENTAGE OF UNLOADS OF CALIFORNIA, FLORIDA,
AND ALL VARIETIES OF ORANGES SOLD ON THE
CHICAGO AUCTION, 1928-1940*

Year	California and Arizona	Florida	All Varieties
1928	96.6	69.5	91.8
1929	98.5	79.4	93.7
1930	94.2	92.0	93.6
1931	83.2	80.5	81.9
1932	77.3	72.5	75.8
1933	71.3	70.5	71.2
1934	72.0	74.4	71.5
1935	72.3	76.3	72.7
1936	76.2	63.5	70.2
1937	82.9	65.7	73.2
1938	70.2	60.6	66.8
1939	79.1	53.1	68.0
1940	74.3	53.1	68.4

*Source: Tables 8 and 10.

TABLE 12

PERCENTAGE OF AUCTION SALES OF CALIFORNIA
AND FLORIDA ORANGES ACCOUNTED FOR BY TWO
COOPERATIVE SHIPPING ORGANIZATIONS,
1930-31 TO 1940-41*

Season	California Fruit Growers Exchange*				Florida Citrus Exchange*
	Navels	Valencias	Miscellaneous	All Varieties	
1930-31	No Data	No Data	No Data	No Data	58.06
1931-32	85.37	94.46	89.36	89.96	62.14
1932-33	97.06	98.25	93.16	97.60	68.14
1933-34	95.58	98.54	100.00	97.33	46.11
1934-35	95.58	95.07	78.41	94.92	36.87
1935-36	90.39	94.21	75.84	92.50	38.25
1936-37	92.11	96.41	85.76	94.29	35.47
1937-38	94.85	94.21	84.05	94.40	35.67
1938-39	94.61	95.20	96.67	94.96	36.67
1939-40	98.14	94.74	89.18	96.08	28.95
1940-41	No Data	No Data	No Data	No Data	35.50

*Source: The Chicago offices of the organizations.

TABLE 13

DISTRIBUTION OF AUCTION BUYERS OF CALIFORNIA AND
FLORIDA ORANGES AT CHICAGO, ACCORDING TO
NUMBER OF BOXES PURCHASED,
MARCH 11-16, 1935*

No. of Boxes	Percentage of Buyers of Cali- fornia Oranges	Percentage of Buyers of Florida Oranges
1- 50	8	18
51- 100	13	17
101- 200	20	28
201- 300	13	17
301- 400	11	15
401- 500	8	4
501- 600	4	..
601- 700	6	..
701- 800	4	..
801- 900	6	1
901-1000	1	..
Over 1000	6	..
Total No. of Buyers	85	78
Total No. of Boxes	31,732	14,109
No. of Boxes per Buyer	373	181

*Source: Gardner, op. cit., pp. 24-25.

TABLE 14

ANNUAL AUCTION VALUE OF ORANGES AT CHICAGO, BY PRINCIPAL VARIETIES, 1928-1940

Year	California and Arizona				Florida	Texas and Others	Total
	Navels	Valencias	Misc.	Total			
1928	\$5,075,184	\$5,325,856	\$254,140	\$10,655,180	\$ 991,990	\$ 1,254	\$11,648,424
1929	4,817,547	5,014,675	1,051	9,833,273	985,832	4,450	10,823,555
1930	4,608,658	5,456,316	151,712	10,216,686	1,434,217	12,164	11,663,068
1931	3,265,906	3,617,125	18,743	6,901,774	1,314,913	6,521	8,223,208
1932	2,500,247	2,863,631	14,629	5,378,507	984,696	21,498	6,384,701
1933	1,659,318	2,467,646	16,937	4,144,401	887,863	7,806	5,040,070
1934	2,305,830	2,832,399	11,412	5,149,641	1,178,354	3,713	6,331,708
1935	2,159,756	3,212,689	148,724	5,521,169	997,759	.....	6,518,928
1936	2,218,214	2,852,552	32,597	5,103,363	1,210,064	.....	6,313,427
1937	2,015,310	3,214,974	52,654	5,282,938	1,685,359	59,445	7,027,752
1938	1,480,035	2,415,679	18,959	3,914,673	1,182,945	113,415	5,211,033
1939	1,462,296	2,416,867	9,225	3,888,388	1,528,643	156,289	5,573,320
1940	2,065,917	3,035,366	118,962	5,220,245	874,045	140,411	6,234,701

Per Cent of Total

1928	43.57	45.72	2.18	91.47	8.52	0.01	100.00
1929	44.51	46.33	0.01	90.85	9.11	0.04	100.00
1930	39.52	46.78	1.30	87.60	12.30	0.10	100.00
1931	39.72	43.99	0.23	83.94	15.99	0.07	100.00
1932	39.16	44.65	0.23	84.24	15.42	0.34	100.00
1933	32.93	48.96	0.34	82.23	17.62	0.15	100.00
1934	36.42	44.73	0.18	81.33	18.61	0.06	100.00
1935	33.13	49.28	2.28	84.69	15.36	....	100.00
1936	35.13	45.18	0.52	80.83	19.17	....	100.00
1937	28.68	45.75	0.75	75.18	23.98	0.84	100.00
1938	28.40	46.36	0.36	75.12	22.70	2.18	100.00
1939	26.24	43.36	0.17	69.77	27.43	2.80	100.00
1940	33.14	48.69	1.91	83.74	14.02	2.24	100.00

TABLE 15

AUCTION SALES AND PRICES PER BOX OF CALIFORNIA
NAVELS AT CHICAGO, ACCORDING TO GRADE,
1932-33 TO 1939-40*

Season (Nov.-Oct.)	1st Grade		2nd Grade		Total	
	Per Cent of Total Sales	Price	Per Cent of Total Sales	Price	Per Cent	Price
1932-33	89.59	\$2.77	10.41	\$2.37	100.00	\$2.73
1933-34	89.10	3.00	10.90	2.66	100.00	2.97
1934-35	81.75	3.04	18.25	2.69	100.00	2.98
1935-36	83.04	3.30	16.96	2.88	100.00	3.23
1936-37	71.17	3.78	28.83	3.82	100.00	3.79
1937-38	92.43	2.70	7.57	2.36	100.00	2.68
1938-39	86.07	2.78	13.93	2.39	100.00	2.72
1939-40	88.89	2.89	11.11	2.62	100.00	2.86

*Source: California Fruit Growers Exchange (Chicago office).

TABLE 16

SIZE DISTRIBUTION OF AUCTION SALES AND PRICES OF CALIFORNIA NAVELS
AT CHICAGO, 1933-34 TO 1938-39^a

Size	1933-34 ^b		1934-35		1935-36		1936-37		1937-38		1938-39	
	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price
48												
64	{ 0.71 }	{ \$2.40 }	{ 2.90 }	{ \$2.36 }	 ^c	\$2.50	 ^c	\$3.08	 ^c	\$2.65	 ^c	.....
80					0.62 ^c	2.64	0.43 ^c	3.19	0.35 ^c	2.96	0.18 ^c	2.90
96						2.71		2.60		1.95		3.79
100	4.40	2.55	12.64	2.47	2.96	2.88	2.78	3.47	2.46	2.88	1.24	3.17
126	13.79	2.65	21.37	2.71	9.28	3.02	9.02	3.59	9.81	2.69	5.55	3.13
150	20.19	2.84	20.96	2.94	14.34	3.18	15.74	3.71	17.64	2.69	12.84	3.08
176	18.71	2.98	15.48	3.17	15.55	3.32	17.58	3.83	18.84	2.71	16.64	2.96
200	15.76	3.15	11.11	3.38	15.51	3.37	17.79	3.92	18.97	2.75	20.29	2.80
220	12.85	3.14	7.55	3.47	16.06	3.33	16.42	3.81	15.53	2.65	19.42	2.55
252	6.62	3.13	3.94	3.60	11.52	3.28	10.35	3.87	8.79	2.56	12.57	2.36
288	4.49	3.11	2.61	3.46	9.02	3.20	6.48	3.91	5.12 ^c	2.49	7.87 ^c	2.29
324					0.05	.....	0.03	3.25	.....	2.51	.....	2.40
344	{ 1.96 }	{ 2.87 }	{ 1.13 }	{ 3.05 }	3.71 ^c	2.98	2.59 ^c	3.42	1.87 ^c	2.49	2.80 ^c	2.19
360 .....					.....	3.11	.....	3.81	.....	2.30	.....	1.90
392					1.30	2.89	0.78	3.47	0.58	2.19	0.60	1.99
420	{ 0.52 }	{ 2.91 }	{ 0.31 }	{ 2.94 }	0.06 ^c	2.92	0.01 ^c	3.65	0.04	2.65	.....	.....
442 .....					.....	2.50	.....	4.20	.....	.....	.....	.....
Total ..	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....
Average size and Price	183.7	\$2.95	162.0	\$2.98	205.8	\$3.23	197.6	\$3.78	192.6	\$2.67	206.6	\$2.72

^aSource: Price-Realized Catalogues of the Fruit Auction Sales Company.

^bJanuary through June only.

^cLess than 0.01 per cent.

TABLE 17

AUCTION SALES AND PRICES OF CALIFORNIA
VALENCIAS AT CHICAGO, ACCORDING
TO GRADE, 1932-33 TO 1939-40*

Season (Nov.-Oct.)	1st Grade		2nd Grade		Total	
	Per Cent of Total Sales	Price	Per Cent of Total Sales	Price	Per Cent	Price
1932-33	69.53	\$3.38	30.47	\$2.85	100.00	\$3.22
1933-34	78.80	3.90	21.20	3.20	100.00	3.75
1934-35	74.13	3.47	25.87	3.15	100.00	3.38
1935-36	69.66	4.16	30.34	3.44	100.00	3.94
1936-37	56.42	5.30	43.58	4.50	100.00	4.96
1937-38	89.44	3.00	10.56	2.68	100.00	2.96
1938-39	69.61	3.37	30.39	2.85	100.00	3.21
1939-40	84.80	3.35	15.20	2.79	100.00	3.26

*Source: California Fruit Growers Exchange (Chicago office).

TABLE 18

SIZE DISTRIBUTION OF AUCTION SALES AND PRICES OF CALIFORNIA VALENCIAS,
AT CHICAGO, 1934 TO 1939^a

Size	1934		1935		1936		1937		1938		1939	
	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price
80	 ^b	\$3.04	0.02	\$2.68	 ^b	\$3.07	0.01	\$3.49	 ^b	\$2.66	0.01	\$2.24
100	0.27	3.76	0.58	3.06	0.35	3.14	0.40	4.03	0.17	3.19	0.23	2.79
126	1.54	4.10	3.55	3.29	2.18	3.62	2.35	4.59	1.78	3.26	1.33	3.37
150	5.00	4.23	8.78	3.44	5.56	4.06	6.99	4.97	8.90	3.18	3.92	3.68
176	8.63	4.25	12.14	3.57	8.84	4.30	10.93	5.19	14.18	3.19	6.72	3.90
200	13.41	4.35	15.47	3.55	13.65	4.41	15.91	5.34	21.43	3.08	12.17	3.84
220	19.00	4.24	17.52	3.49	18.18	4.37	18.70	5.27	20.86	2.93	18.37	3.57
252	17.70	4.28	14.64	3.37	17.38	4.28	16.61	5.12	15.30	2.76	21.23	3.16
288	19.62	4.15	15.61	3.13	18.55	3.97	16.00	4.84	12.41	2.61	22.35	2.78
324	{ 11.02 }	{ 3.79 }	{ 8.60 }	{ 2.86 }	0.01	3.56	0.01	3.66	 ^b	2.61	0.01	2.27
344					10.07 ^b	3.44	7.68	4.10	4.03 ^b	2.55	10.17 ^b	2.47
360 .....	.....	.....	.....	.....	.....	3.46	0.01	3.54	.....	2.45	.....	2.55
392	{ 3.81 }	{ 3.56 }	{ 3.09 }	{ 2.71 }	4.34	3.27	3.61	3.67	0.94 ^b	2.48	3.46	2.27
420					0.09	3.41	0.30	3.82	 ^b	2.11	0.01 ^b	1.28
442					0.20	3.45	0.48 ^b	3.24	 ^b	2.13	.....	1.95
560 .....					.....	.....	.....	2.70	.....	.....	.....	.....
Total	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....
Average .	247.5	\$4.14	232.6	\$3.34	246.8	\$4.09	238.0	\$4.97	221.3	\$2.94	250.9	\$3.20

^aSource: Price-Realized Catalogues of Fruit Auction Sales Company.

^bLess than 0.01 per cent.

TABLE 19

PREMIUM SIZES AND AMOUNT OF PREMIUM PER BOX FOR
CALIFORNIA VALENCIAS, 1934-39*

1934		1935		1936		1937		1938		1939	
Premium Size	Amount of Premium	Premium Size	Amount of Premium	Premium Size	Amount of Premium	Premium Size	Amount of Premium	Premium Size	Amount of Premium	Premium Size	Amount of Premium
150	\$0.09	150	\$0.10	...	.....	...	.....	100	\$0.25	126	\$0.17
176	0.11	176	0.23	176	\$0.21	176	\$0.22	126	0.32	150	0.48
200	0.21	200	0.21	200	0.32	200	0.37	150	0.24	175	0.70
220	0.10	220	0.15	220	0.28	220	0.30	176	0.25	200	0.64
252	0.14	252	0.03	252	0.19	252	0.15	200	0.14	220	0.37
288	0.01	...	.....	...	.....	...	.....	...	.....	...	.....

*Source: Table 18.

TABLE 20

AUCTION SALES AND PRICES OF ALL CALIFORNIA
ORANGES AT CHICAGO, ACCORDING TO GRADE,
1932-33 TO 1939-40*

Season (Nov.-Oct.)	1st Grade		2nd Grade		Total	
	Per Cent of Total Sales	Price	Per Cent of Total Sales	Price	Per Cent	Price
1932-33	79.63	\$3.03	20.37	\$2.72	100.00	\$2.97
1933-34	83.15	3.49	16.85	3.05	100.00	3.42
1934-35	78.22	3.24	21.78	2.96	100.00	3.18
1935-36	75.30	3.76	24.70	3.28	100.00	3.64
1936-37	63.24	4.49	36.76	4.24	100.00	4.40
1937-38	90.75	2.86	9.25	2.57	100.00	2.83
1938-39	76.45	3.09	23.55	2.74	100.00	3.01
1939-40	86.68	3.15	13.32	2.73	100.00	3.09

*Source: California Fruit Growers Exchange (Chicago office).

TABLE 21

VARIETAL COMPOSITION OF AUCTION SALES OF FLORIDA ORANGES, BY SEASONS,
1930-31 TO 1940-41^a
(Per Cent)

Variety	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40	1940-41
Duncans ....	.....	.....	.....	.....	.....	0.47	.....	.....	.....	.....	.....
Indian Rivers ...	15.16	7.56	11.56	3.92	3.46	3.33	0.41	0.10	0.20	0.10	0.79
Kings	0.04	0.22	0.01	0.28	0.03	0.28	.....	0.12	0.02	0.05	.....
Navels	0.26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oranges ^b ...	37.42	39.69	29.84	24.78	39.47	28.38	23.32	24.75	25.92	26.28	22.00
Pineapples .	13.24	19.54	21.39	32.32	26.91	26.00	26.94	26.71	27.80	36.78	29.67
Seedless ...	.....	.....	0.40	0.85	.....	.....	.....	.....	.....	.....	.....
Temples	0.61	1.60	1.63	1.86	1.46	2.04	0.18	2.28	2.76	2.81	.....
Valencias ..	33.27	31.39	35.17	35.99	28.67	39.50	49.15	46.04	43.30	33.98	47.54
All	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

^aSource: Florida Citrus Exchange (Chicago office).

^bIncludes: Parson Browns, Round, and other early varieties not elsewhere classified.

TABLE 22
VARIETAL PREMIUMS^a FOR FLORIDA ORANGES SOLD
ON THE CHICAGO AUCTION,
1930-31 TO 1940-41^b

Season	Indian Rivers	Round Oranges	Pineapples	Valencias
1930-31	8	-26	-47	44
1931-32	21	-28	-21	42
1932-33	34	- 5	11	-16
1933-34	14	-26	-17	32
1934-35	62	- 4	-13	12
1935-36	27	-13	-16	23
1936-37	19	-25	-27	27
1937-38	27	39	0	-21
1938-39	19	4	-27	14
1939-40	-63	-24	-39	61
1940-41	8	-18	-16	18

^aDifference between varietal price and average price for all varieties.

^bSource: Table 62.

TABLE 23
COMPOSITION OF AUCTION SALES OF FLORIDA ORANGES, BY GRADES, 1930-31 TO 1940-41*

Grade	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40	1940-41
Fancy	2.02	0.17	0.90	0.13	0.19	.....	.....	.....	.....	.....	.....
U. S. No. 1:											
Brights	2.20	1.24	0.99	0.22	0.08	0.28	.....	.....	.....	.....	.....
Goldens	1.19	0.78	0.96	0.04	0.85	1.47	.....	.....	.....	.....	.....
Russets	0.23	0.14	0.07	.....	3.12	3.27	.....	.....	.....	.....	.....
U. S. No. 1	49.33	37.27	20.97	30.27	33.91	35.29	20.21	17.46	9.66	11.06	13.48
U. S. No. 1 Russets	3.40	5.85	3.02	5.43	2.07	0.22	.....	.....	.....	.....	.....
Total	56.35	45.28	26.01	35.96	40.03	40.53	20.21	17.46	9.66	11.06	13.48
Combination:											
60% #1; 40% #2 .....	.....	.....	.....	.....	.....	.....	37.87	46.83	62.25	55.10	.....
40% #1; 60% #2 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68.93
Total .....	.....	.....	.....	.....	.....	.....	37.87	46.83	62.25	55.10	73.39
U. S. No. 2	41.05	53.28	69.03	62.24	57.91	56.79	39.60	32.55	27.25	24.03	13.13
U. S. No. 3	0.58	1.27	4.06	1.67	1.87	2.68	2.32	3.16	0.84	9.81	.....
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

*Source: Florida Citrus Exchange (Chicago office).

TABLE 24
AVERAGE AUCTION PRICES PER BOX FOR FLORIDA ORANGES, BY GRADES, 1930-31 TO 1940-41*

Grade	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40	1940-41
Fancy	\$3.58	\$3.62	\$3.07	\$3.22	\$3.60	.....	.....	.....	.....	.....	.....
U. S. No. 1:											
Brights	\$3.30	\$3.10	\$2.70	\$2.44	\$2.34	\$3.41	.....	.....	.....	.....	.....
Goldens	3.21	2.91	2.64	2.53	3.18	3.55	.....	.....	.....	.....	.....
Russets	2.63	2.73	2.61	.....	2.57	2.86	.....	.....	.....	.....	.....
U. S. No. 1	3.44	3.34	2.75	2.84	2.70	3.22	\$3.26	\$2.58	\$2.27	\$2.44	\$2.55
U. S. No. 1 Russets	3.45	3.32	2.46	2.76	2.79	2.84	.....	.....	.....	.....	.....
Average	\$3.43	\$3.32	\$2.71	\$2.83	\$2.70	\$3.20	\$3.26	\$2.58	\$2.27	\$2.44	\$2.55
U. S. No. 1 and No. 2:											
Combination .....	.....	.....	.....	.....	.....	.....	\$3.40	\$2.32	\$2.26	\$2.34	.....
60% No. 1; 40% No. 2 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	\$2.46
40% No. 1; 60% No. 2 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.46
Average .....	.....	.....	.....	.....	.....	.....	\$3.40	\$2.32	\$2.26	\$2.34	\$2.46
U. S. No. 2	\$3.20	\$3.18	\$2.47	\$2.60	\$2.48	\$3.16	\$3.13	\$2.19	\$2.22	\$2.34	\$2.22
U. S. No. 3	\$2.18	\$2.98	\$1.98	\$2.71	\$2.11	\$2.69	\$2.61	\$1.87	\$1.79	\$2.68	.....
Average - All Grades	\$3.33	\$3.24	\$2.52	\$2.68	\$2.56	\$3.16	\$3.25	\$2.31	\$2.25	\$2.39	\$2.44

*Source: Florida Citrus Exchange (Chicago office).

TABLE 25

SIZE DISTRIBUTION OF AUCTION SALES AND PRICES OF FLORIDA ORANGES
AT CHICAGO, 1933-34 TO 1938-39^a

Size	1933-34 ^b		1934-35		1935-36		1936-37		1937-38		1938-39	
	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price
64 .....	.....	.....	.....	.....	.....^c	\$1.40	.....	.....	.....	.....	.....^c	\$1.80
70 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....^c	1.80
80	 ^c	\$2.23	0.01	\$1.55	0.26	1.92	0.11	\$1.99	0.02	\$1.85	0.03	1.80
96 .....	.....	.....	.....	.....	0.52	1.98	0.15	2.38	0.05	1.58	0.13	1.83
100	0.96	2.09	0.45	1.80	2.80	2.23	2.43	2.39	1.81	1.61	1.08	1.91
112 .....	.....	.....	.....	.....	0.03	2.64	 ^c	2.92	.....	.....	.....	.....
120 .....	.....	.....	.....	.....	.....	.....	.....	.....	0.03	1.60	0.02	2.02
126	5.62	2.44	3.35	2.15	9.45	2.64	11.21	2.86	11.59	1.97	9.25	2.10
138 .....	.....	.....	.....	.....	0.03	3.10	.....	.....	.....	.....	.....	.....
150	11.32	2.66	7.44	2.44	14.91	2.92	15.36	3.19	17.79	2.20	15.32	2.27
176	19.86	2.78	14.36	2.65	19.96	3.17	20.48	3.42	18.91	2.37	18.93	2.38
180 .....	.....	.....	.....	.....	.....	.....	0.02	3.88	.....	.....	0.01	2.02
200	15.69	2.86	13.38	2.76	15.57	3.35	15.08	3.48	14.64	2.46	14.12	2.40
210 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....^c	2.06	 ^c	2.03
216	17.94	2.81	18.48	2.66	14.88	3.39	15.02	3.41	13.86	2.51	17.04	2.23
240 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....^c	2.49	 ^c	2.15

TABLE 25 - Continued

Size	1933-34 ^b		1934-35		1935-36		1936-37		1937-38		1938-39	
	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price	Per Cent of Total	Price
252	16.05	\$2.79	21.62	\$2.59	12.16	\$3.44	11.69	\$3.31	12.11	\$2.50	13.45	\$2.12
270 .....	.....	.....	.....	.....	.....^c	4.82	.....	.....	.....	.....	.....	.....
288	8.49	2.72	13.07	2.50	5.96	3.41	5.65	3.35	5.76	2.51	7.20	2.01
294 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....^c	.....
324	3.77	2.61	6.69	2.38	2.78	3.21	2.33	3.06	2.65	2.38	2.69	1.84
336 .....	.....	.....	.....	.....	.....^c	2.93	.....	.....	.....	.....	.....^c	1.40
344	 ^c	.....	0.01	.....	.....^c	.....	.....	.....	.....^c	2.25	 ^c	1.50
360	0.57	2.57	1.14	2.34	0.67	3.10	0.47	3.03	0.77	2.22	0.68	1.74
378 .....	.....	.....	.....	.....	.....^c	2.96	 ^c	2.19	 ^c	2.25	.....	.....
392 .....	.....	.....	.....	.....	.....^c	.....	.....	.....	.....^c	2.35	 ^c	1.50
420 .....	.....	.....	.....	.....	.....^c	2.88	 ^c	2.14	 ^c	2.54	 ^c	1.50
490 .....	.....	.....	.....	.....	.....	.....	.....	.....	0.01	1.82	 ^c	2.23
Total ...	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....	100.00	.....
Average Size and Price	209.0	\$2.75	225.7	\$2.58	195.6	\$3.15	193.5	\$3.28	194.2	\$2.34	200.2	\$2.23

^aSource: Price-Realized Catalogues of the Fruit Auction Sales Company.

^bJanuary through June only. ^cLess than 0.01 per cent.

TABLE 26

AMPLITUDE OF FLUCTUATION AND MONTHS OF HIGHEST
AND LOWEST AUCTION PRICES AND SALES
AT CHICAGO, 1928-1940*

Year	Difference between Highest and Lowest Sales	Difference between Highest and Lowest Prices	Month of Highest Sales	Month of Lowest Prices	Month of Lowest Sales	Month of Highest Prices
1928	115,964	\$3.01	March	Dec.	Sept.	May
1929	153,851	1.93	May	March	Sept.	Dec.
1930	136,471	4.27	Dec.	Dec.	Sept.	Sept.
1931	107,489	1.19	March	Dec.	Oct.	Oct.
1932	101,238	0.67	April	Jan.	Sept.	Nov.
1933	91,357	0.93	June	April	Sept.	Sept.
1934	96,672	1.84	April	Dec.	Sept.	Oct.
1935	96,883	0.77	May	Jan.	Sept.	Sept.
1936	61,360	1.62	March	Dec.	Feb.	Sept.
1937	83,348	2.87	May	Dec.	July	Sept.
1938	97,028	0.92	May	Jan.	July	Aug.
1939	80,911	1.55	Oct.	Feb.	Aug.	Sept.
1940	68,005	1.22	May	Dec.	Aug.	June

*Source: Table 60.

TABLE 27

SEASONAL INDEXES OF AUCTION SALES AND PRICES PER BOX OF ALL ORANGES
AT CHICAGO, 1928-1940*

Period	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Sales													
1928-32	109.78	107.28	122.50	128.62	117.87	98.26	86.86	77.14	66.53	76.29	95.53	113.34	100.00
1933-37	104.35	96.68	109.85	120.21	123.04	105.74	84.64	75.95	73.98	93.03	105.80	106.73	100.00
1938-40	97.56	107.64	109.42	105.44	123.81	106.99	86.37	79.30	81.80	108.84	95.20	97.63	100.00
Price Per Box													
1928-32	84.62	88.39	93.41	97.95	108.38	104.27	110.80	109.15	114.56	115.64	91.24	81.59	100.00
1933-37	85.83	87.65	89.46	91.64	97.85	106.65	115.22	115.63	120.03	116.10	93.92	80.02	100.00
1938-40	81.55	87.15	87.15	95.96	101.92	109.30	106.32	113.58	118.46	107.63	100.13	90.85	100.00

*Source: Table 60.

TABLE 28

AMPLITUDE OF FLUCTUATIONS, AND MONTHS OF HIGHEST AND LOWEST AUCTION
PRICES AND SALES OF ALL CALIFORNIA ORANGES AT CHICAGO, 1928-40*

Year	Difference Between Highest and Lowest Monthly Sales	Difference Between Highest and Lowest Monthly Prices	Month of Highest Sales	Month of Lowest Prices	Month of Lowest Sales	Month of Highest Prices
1928	92,155	\$2.87	March	Jan.	Sept.	Sept.
1929	112,621	2.16	May	March	Sept.	Dec.
1930	107,849	4.75	April	Dec.	Nov.	Oct.
1931	61,036	1.16	March	Dec.	Feb.	Oct.
1932	58,393	1.76	April	Jan.	Sept.	Nov.
1933	63,465	0.91	June	April	Jan.	Sept.
1934	70,968	1.88	May	Dec.	Feb.	Oct.
1935	62,948	0.68	May	Jan.	Nov.	Nov.
1936	73,883	1.52	June	Dec.	Feb.	Sept.
1937	44,646	2.76	March	Dec.	Nov.	Sept.
1938	73,636	0.79	Oct.	Jan.	Jan.	Aug.
1939	85,941	1.31	Oct.	Feb.	Jan.	Sept.
1940	88,257	0.99	May	March	Jan.	Nov.

*Source: Table 61.

TABLE 29

SEASONAL INDEXES OF AUCTION SALES AND PRICE PER BOX OF ALL CALIFORNIA
ORANGES AT CHICAGO, 1928-1940*

Period	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Sales													
1928-32	93.17	92.89	114.49	124.86	119.61	106.89	101.27	90.33	77.91	85.70	86.81	106.05	100.00
1933-37	84.66	80.95	96.04	109.29	116.42	115.70	108.80	98.29	95.74	104.54	90.94	98.63	100.00
1938-40	68.94	78.81	89.11	90.86	116.43	113.63	110.38	112.00	115.52	130.13	89.16	85.04	100.00
Price Per Box													
1928-32	86.50	88.96	92.48	95.54	106.35	102.62	108.68	106.99	112.29	116.95	99.23	83.41	100.00
1933-37	87.67	88.30	88.70	90.92	98.56	106.65	112.08	112.36	116.63	117.66	100.04	80.43	100.00
1938-40	86.24	90.74	88.60	96.37	101.10	107.18	101.21	107.40	112.02	104.80	106.73	97.61	100.00

*Source: Table 61.

TABLE 30

INDEX OF VARIABILITY OF AVERAGE MONTHLY AUCTION
PRICES AT CHICAGO FOR ALL VARIETIES OF
CALIFORNIA ORANGES, 1928-1940

Year	Weighted Monthly Deviation (Cents)	Average Price	Index of Variability (Deviations as Per Cent of Average Price)
1928	85.3	\$6.13	13.9
1929	46.3	4.15	11.2
1930	104.0	6.21	16.7
1931	23.7	3.60	6.6
1932	20.2	3.15	6.4
1933	23.1	2.89	8.0
1934	56.4	3.50	16.1
1935	19.4	3.22	6.0
1936	44.8	3.63	12.3
1937	63.9	4.41	14.5
1938	18.7	2.84	6.6
1939	29.3	2.97	9.9
1940	21.6	3.17	6.8

TABLE 31

SEASONAL INDEXES OF AUCTION SALES AND PRICES PER BOX OF CALIFORNIA NAVELS
AT CHICAGO, 1928-29 TO 1940-41*

Period	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Average
Sales									
1928-29 to 1932-33	43.11	135.90	115.66	116.47	135.76	145.52	97.86	9.72	100.00
1933-34 to 1937-38	41.74	115.24	122.81	115.58	142.58	144.89	113.03	4.73	100.00
1938-39 to 1940-41	23.28	118.65	115.67	132.22	140.89	147.32	118.28	3.69	100.00
Price Per Box									
1928-29 to 1932-33	130.53	108.73	101.78	99.69	103.20	104.40	113.22	38.45	100.00
1933-34 to 1937-38	109.95	99.47	99.80	103.94	104.00	108.01	115.82	59.01	100.00
1938-39 to 1940-41	104.18	103.70	102.01	99.60	100.80	107.57	108.29	73.85	100.00

*Source: Table 61.

TABLE 33

HIGHEST-PRICED SIZE OF CALIFORNIA NAVELS, AND
NUMBER OF PREMIUM SIZES AT CHICAGO,
BY MONTHS, 1933-34 TO 1938-39

Season and Month	Highest-Priced Size	No. of Premium Sizes
1933-34: January ...	252	5
February ..	80	2
March	288	6
April	288	7
May	220	5
1934-35: November ..	252	6
December ..	252	7
January ...	220	5
February ..	252	7
March	252	7
April	252	6
May	200	5
1935-36: November ..	220	4
December ..	252	5
January ...	200	5
February ..	200	2
March	100	4
April	80	7
May	288	4
June	200	3
1936-37: November ..	252	4
December ..	100	6
January ...	176	4
February ..	200	4
March	288	5
April	288	2
May	200	7
June	200	4
1937-38: November ..	176	5
December ..	80	5
January ...	100	6
February ..	80	6
March	80	6
April	80	6
May	200	4
June	100	5
1938-39: November ..	176	4
December ..	100	6
January ...	150	5
February ..	100	5
March	100	5
April	100	6
May	100	6
June	200	6

TABLE 32

AVERAGE SIZE OF CALIFORNIA NAVELS SOLD ON THE
CHICAGO AUCTION, BY MONTHS,
1933-34 TO 1938-39
(No. of Oranges per Box)

Month	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39
November ..	.....	152.5	176.9	203.1	220.9	184.1
December ..	.....	169.7	175.8	206.8	202.4	205.3
January ...	187.6	167.3	198.9	201.1	185.8	200.0
February ..	204.3	162.5	225.9	202.3	199.4	204.9
March	180.6	160.0	213.8	191.9	189.7	210.0
April	161.6	152.8	205.6	185.9	184.5	213.1
May	173.2	145.0	211.4	191.0	183.1	209.0
June .....	.....	.....	190.3	.....	198.2	193.7
Average .	183.7	162.0	205.6	197.6	192.6	206.6
Range ...	42.7	24.7	50.1	20.9	37.8	29.0

TABLE 34

INDEX OF VARIABILITY OF AVERAGE MONTHLY
AUCTION PRICES AT CHICAGO FOR
CALIFORNIA NAVELS,
1928-29 TO 1940-41

Season	Weighted Monthly Deviation (Cents)	Average Price	Index of Variability (Deviations as Per Cent of Average Price)
1928-29	50.5	\$4.02	12.6
1929-30	49.9	5.79	8.6
1930-31	34.6	3.64	9.5
1931-32	18.9	3.13	6.0
1932-33	16.8	2.73	6.2
1933-34	20.1	2.98	6.7
1934-35	21.1	2.97	7.1
1935-36	15.6	3.23	4.8
1936-37	39.9	3.78	10.6
1937-38	15.0	2.67	5.6
1938-39	14.0	2.72	5.1
1939-40	19.1	2.86	6.7
1940-41	5.4	3.03	1.8

TABLE 35

SEASONAL INDEXES OF AUCTION SALES AND PRICES PER BOX OF CALIFORNIA
VALENCIAS AT CHICAGO, 1928-1940^a

Period	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Sales										
1928-32	7.92	85.67	160.86	157.65	140.69	121.34	133.48	85.11	7.28	100.00
1933-37	0.00	41.97	136.43	137.78	124.48	121.25	132.39	79.51	26.20	100.00
1938-40	 ^b	34.18	128.03	128.78	130.67	134.78	151.82	86.00	5.74	100.00
Prices										
1928-32	61.23	109.54	106.62	112.83	111.07	116.57	121.46	112.17	48.51	100.00
1933-37	0.00	86.33	108.25	113.38	113.67	117.99	119.03	110.50	30.85	100.00
1938-40	 ^b	95.68	99.31	93.39	99.10	103.36	96.72	100.45	111.99	100.00

^aSource: Table 61.

^bLess than 1/2 of 1 per cent of average monthly sales.

TABLE 37

HIGHEST-PRICED SIZE OF CALIFORNIA VALENCIAS,
AND NUMBER OF PREMIUM SIZES AT CHICAGO,
BY MONTHS, 1934-39

Season and Month	Highest-Priced Size	No. of Premium Sizes
1934: May	220	4
June	150	5
July	288	4
August	200	4
September	150	6
October	252	6
November	200	7
1935: May	176	4
June	126	4
July	252	5
August	176	5
September	176	7
October	200	8
November	200	5
December	252	4
1936: May	252	6
June	200	4
July	200	4
August	200	5
September	252	5
October	200	4
November	200	7
1937: May	176	5
June	176	5
July	220	5
August	200	5
September	288	4
October	200	4
November	200	4
1938: March	{200}	3
April	{220}	2
May	200	2
June	126	2
July	100	2
August	176	5
September	126	5
October	100	5
November	126	5
December	126	5
1939: May	200	5
June	176	4
July	176	4
August	176	5
September	176	5
October	200	6
November	176	6
December	150	5

TABLE 36

AVERAGE SIZE OF CALIFORNIA VALENCIAS SOLD ON
THE CHICAGO AUCTION, BY MONTHS, 1934-39
(No. of Oranges per Box)

Month	1934	1935	1936	1937	1938	1939
March .....	.....	.....	.....	.....	199.1	.....
April .....	.....	.....	.....	.....	194.0	.....
May	255.5	226.0	216.3	253.2	219.0	229.5
June	242.2	224.8	230.2	233.1	216.5	239.0
July	237.8	218.1	247.4	243.1	216.5	249.5
August	249.0	240.2	254.4	241.3	225.5	247.7
September	252.9	243.1	248.5	234.2	225.7	252.5
October	250.5	245.1	251.7	230.4	227.1	264.0
November	259.1	235.0	259.4	229.7	214.3	246.4
December .....	.....	224.5	.....	.....	205.1	268.0
Average	247.5	232.6	246.8	238.0	221.3	250.9
Range	21.3	27.0	43.1	23.5	33.1	36.5

TABLE 38
INDEX OF VARIABILITY OF AVERAGE MONTHLY
AUCTION PRICES AT CHICAGO FOR
CALIFORNIA VALENCIAS, 1928-40

Year	Weighted Monthly Deviation (Cents)	Average Price	Index of Variability (Deviations as Per Cent of Average Price)
1928	28.1	\$7.08	4.0
1929	27.3	4.29	6.4
1930	33.8	7.31	4.6
1931	23.7	3.75	6.3
1932	14.6	3.24	4.5
1933	25.8	3.01	8.6
1934	27.2	4.14	6.6
1935	11.4	3.34	3.4
1936	19.4	4.09	4.7
1937	34.4	4.97	6.9
1938	16.7	2.94	5.7
1939	20.3	3.20	6.3
1940	21.2	3.35	6.3

TABLE 39
SEASONAL INDEXES OF AUCTION SALES AND PRICES PER BOX OF ALL FLORIDA
ORANGES AT CHICAGO, 1928-29 TO 1940-41^a

Period	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Average
Sales											
1928-29 to 1932-33	14.30	99.68	104.86	137.71	137.09	132.72	117.12	104.45	52.07	 ^b	100.00
1933-34 to 1937-38	38.37	105.28	91.76	130.23	120.56	118.22	125.52	114.64	55.42	 ^b	100.00
1938-39 to 1940-41	51.90	89.84	102.99	147.12	126.83	122.24	124.93	118.98	88.82	26.35	100.00
Prices											
1928-29 to 1932-33	67.40	103.32	97.34	96.58	102.49	113.87	123.80	116.48	78.72	 ^b	100.00
1933-34 to 1937-38	103.69	96.13	88.15	91.11	95.49	98.88	102.98	109.84	113.73	 ^b	100.00
1938-39 to 1940-41	105.50	92.16	87.12	92.61	99.42	108.46	119.72	126.54	128.91	39.56	100.00

^aSource: Table 62.

^bInsignificant quantities.

TABLE 40
AVERAGE SIZE OF ALL FLORIDA ORANGES SOLD ON THE CHICAGO AUCTION, BY MONTHS, 1933-34 TO 1938-39
(No. of Oranges per Box)

Month	1933-34		1934-35		1935-36		1936-37		1937-38		1938-39
	1 3/5-Bu. Std. Boxes	1 3/5-Bu. Std. Boxes	1 3/5-Bu. Std. Boxes	1 3/5-Bu. Std. Boxes	2-Bu. Bruce Boxes	All Boxes	1 3/5-Bu. Std. Boxes	2-Bu. Bruce Boxes	1 3/5-Bu. Std. Boxes	2-Bu. Bruce Boxes	1 3/5-Bu. Std. and Bruce Boxes
October .....	.....	241.7	.....	.....	.....	.....	226.6	.....	229.2	198.3	228.1
November .....	.....	247.2	212.7	.....	.....	212.7	227.1	223.6	226.3	196.1	224.7
December .....	.....	239.8	210.9	.....	.....	210.9	215.5	221.2	208.4	184.5	205.1
January	217.2	240.9	211.1	.....	153.8	210.8	206.6	194.2	201.9	182.4	199.2
February	226.1	236.1	206.6	.....	.....	206.6	205.9	174.4	209.4	188.8	201.4
March	204.5	218.3	187.9	.....	123.3	186.2	193.2	159.8	194.5	174.6	181.1
April	200.4	204.7	200.9	.....	120.9	180.0	189.4	146.7	189.3	172.3	175.5
May	187.6	201.2	186.8	.....	117.4	176.6	186.0	154.9	180.3	171.7	183.1
June	180.6	182.7	173.1	.....	125.4	164.5	178.1	163.5	185.4	165.0	167.6
July .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average ...	209.0	225.7	199.9	.....	120.8	195.6	204.9	159.9	211.5	174.4	194.2
Range	45.5	64.5	39.6	.....	36.4	48.2	49.0	76.9	48.9	33.3	60.5
											56.8

TABLE 41

HIGHEST-PRICED SIZE OF FLORIDA ORANGES, AND
NUMBER OF PREMIUM SIZES AT CHICAGO,
BY MONTHS, 1933-34 TO 1938-39

Season and Month	Highest-Priced Size	No. of Premium Sizes
1933-34: January ...	100	7
February ..	200	3
March	252	2
April	288	5
May	252	5
June	200	4
1934-35: October ...	252	4
November ..	200	3
December ..	200	4
January ...	200	4
February ..	200	4
March	252	4
April	200	4
May	200	4
June	200	4
1935-36: November ..	{216}	5
December ..	{252}	6
January ...	288	6
February ..	288	5
March	252	3
April	288	6
May	252	7
June	288	7
1936-37: October ...	288	3
November ..	200	5
December ..	200	6
January ...	324	6
February ..	288	6
March	288	6
April	288	7
May	252	5
June	176	4
1937-38: October ...	216	4
November ..	200	3
December ..	200	5
January ...	200	3
February ..	200	3
March	288	3
April	252	7
May	176	4
June	200	4
1938-39: October ...	200	4
November ..	200	4
December ..	150	3
January ...	{176}	3
February ..	200	4
March	176	2
April	200	3
May	200	5
June	200	4

TABLE 42

INDEXES OF VARIABILITY OF AVERAGE MONTHLY
AUCTION PRICES AT CHICAGO FOR FLORIDA
ORANGES, BY PRINCIPAL VARIETIES,
1928-29 TO 1940-41

Season	Pineapples	Round Oranges	Valencias	All Varieties
1928-29	No Data	No Data	No Data	4.3
1929-30	No Data	No Data	No Data	14.7
1930-31	6.2	15.8	0.6	15.3
1931-32	7.3	6.7	2.3	9.7
1932-33	5.7	8.1	4.6	6.5
1933-34	3.1	6.2	10.8	9.8
1934-35	2.1	9.4	8.6	8.1
1935-36	3.3	3.4	9.7	6.7
1936-37	8.2	12.7	3.0	9.5
1937-38	10.5	13.4	8.2	13.9
1938-39	0.9	12.8	5.6	9.9
1939-40	6.4	11.3	11.5	18.3
1940-41	5.1	5.0	1.9	7.0

TABLE 43

PERCENTAGE DISTRIBUTION OF AUCTION SALES
OF ORANGES AT CHICAGO, BY DAYS,
1928-1939

Season	Monday	Tuesday	Wednesday	Thursday	Friday	Total
California Navels						
1928-29	29.26	19.32	18.60	16.33	16.49	100.00
1929-30	29.77	20.69	15.82	17.18	16.54	100.00
1930-31	30.59	21.86	15.93	15.51	16.11	100.00
1931-32	30.86	19.84	19.09	17.08	13.13	100.00
1932-33	28.03	22.03	20.11	18.39	11.44	100.00
1933-34	29.34	18.66	17.12	19.33	15.55	100.00
1934-35	31.17	17.13	18.72	17.30	15.68	100.00
1935-36	30.04	16.27	16.92	18.70	16.07	100.00
1936-37	28.07	21.21	18.44	16.25	16.03	100.00
1937-38	29.83	21.68	18.47	16.14	13.88	100.00
1938-39	28.62	18.94	19.25	17.32	15.87	100.00
California Valencias						
1928	29.29	19.70	16.13	18.88	16.00	100.00
1929	26.86	22.18	18.40	16.34	16.22	100.00
1930	29.70	22.50	19.29	14.73	13.78	100.00
1931	29.53	22.45	19.52	16.03	12.47	100.00
1932	26.10	22.53	19.13	18.77	13.47	100.00
1933	28.15	19.94	19.60	17.97	14.34	100.00
1934	31.21	19.09	16.41	18.29	15.00	100.00
1935	29.59	20.37	16.65	17.82	15.57	100.00
1936	25.61	21.21	19.43	18.84	14.91	100.00
1937	22.47	22.37	19.67	18.49	17.00	100.00
1938	25.91	21.53	18.35	17.83	16.38	100.00
1939	29.70	18.26	18.31	17.34	16.39	100.00
Florida Oranges						
1928-29	28.84	17.36	18.99	19.44	15.37	100.00
1929-30	31.68	18.45	16.35	17.32	16.20	100.00
1930-31	30.00	20.26	19.78	16.86	13.10	100.00
1931-32	32.72	17.77	20.58	14.42	14.51	100.00
1932-33	34.18	21.32	18.63	14.56	11.31	100.00
1933-34	33.39	17.72	17.00	16.81	15.06	100.00
1934-35	33.18	17.23	16.63	14.81	18.15	100.00
1935-36	35.80	18.91	15.59	12.72	16.98	100.00
1936-37	33.78	17.44	18.02	14.88	15.88	100.00
1937-38	36.22	17.80	18.33	13.93	13.72	100.00
1938-39	32.24	16.52	20.91	13.41	16.92	100.00

TABLE 44

NUMBERS OF BRANDS OF ORANGES SOLD ON THE CHICAGO AUCTION,
1935-36 TO 1938-39, BY PRINCIPAL VARIETIES

Month	California Navels				Floridas						Month	California Valencias			
	1935-36	1936-37	1937-38	1938-39	(Std. Boxes) 1935-36	(2-Bu. Bruce Boxes) 1935-36	(Std. Boxes) 1936-37	(2-Bu. Bruce Boxes) 1936-37	(Std. Boxes) 1937-38	(2-Bu. Bruce Boxes) 1937-38		1936	1937	1938	1939
October ...	...	...	...	...	...	..	75	..	94	6	April	...	...	...	...
November ..	11	65	38	22	58	..	96	7	97	10	May	16	86	59	22
December ..	83	97	74	68	78	..	95	3	66	15	June	165	108	111	134
January ...	136	126	92	120	104	1	117	8	70	15	July	142	127	88	141
February ..	116	128	99	72	71	..	98	12	49	43	August	129	139	127	112
March	127	143	102	81	122	4	63	24	50	46	September .	125	138	125	141
April	113	136	77	89	72	17	72	69	21	71	October ...	144	138	114	208
May	83	37	88	92	69	23	57	51	12	75	November ..	74	68	87	110
June	...	...	11	8	26	12	32	33	7	40	December ..	...	...	10	...

TABLE 45

NUMBER OF BASIC BRANDS OF ORANGES, BY VARIETIES,
RECEIVING DAILY PRICE PREMIUMS,
1935-36 TO 1938-39

Season	California Navels			California Valencias			Floridas (Std. Boxes)			Floridas (Bruce)		
	Number of Basic Brands	Number Receiving Premiums	Percentage	Number of Basic Brands	Number Receiving Premiums	Percentage	Number of Basic Brands	Number Receiving Premiums	Percentage	Number of Basic Brands	Number Receiving Premiums	Percentage
1935-36	27	22	81.5	18	13	72.2	13	9	69.2	..	..	....
1936-37	20	15	75.0	19	12	63.2	13	8	61.5	12	6	50.0
1937-38	21	16	76.2	20	9	45.0	14	11	78.6	16	12	75.0
1938-39	21	11	52.4	17	10	58.8	19	14	73.7	..	..	....

TABLE 46

PERCENTAGE OF THE TOTAL SALES OF PREMIUM BRANDS
OF ORANGES SOLD ON THE CHICAGO FRUIT AUCTION
WHICH WAS ACCOUNTED FOR BY THE CALIFORNIA
FRUIT GROWERS EXCHANGE AND THE FLORIDA
CITRUS EXCHANGE, 1935-36 TO 1938-39

Cooperative and Variety	1935-36	1936-37	1937-38	1938-39
<u>California Fruit Growers Exchange:</u>				
Navels	97.15	95.92	98.67	96.88
Valencias	98.20	99.49	98.69	97.70
<u>Florida Citrus Exchange:</u>				
Standard Boxes	57.00	56.54	43.23	49.47
2-Bu. Bruce Boxes .	37.84	23.91	38.90	.....

TABLE 47

PRICE PREMIUMS PAID FOR WRAPPED VALENCIAS,
BY MONTHS, 1938, ON THE CHICAGO AUCTION^a
(Cents per Box)

June	July	Aug.	Sept.	Oct.	Nov.	Dec.
16	2	1	13	19	..	..
5	1	25	18	23	..	..
..	4	14	17	24	..	..
..	14	9	10	14	..	..
..	15	20	20	7	..	..
..	20	6	28	..	..	..
..	21	21	25	..	..	..
..	17	26	22	..	..	..
..	8	21	33	..	..	..
..	13	..	..	..	..	..
..	-11 ^b	..	..	..	..	..
..	8	..	..	..	..	..

^aBased upon oranges of the same brand sold on the same day from the same car.

^bPremium in favor of the unwrapped oranges.

TABLE 48

INDEXES OF DAILY PRICE VARIABILITY OF AUCTION
PRICES AT CHICAGO, BY PRINCIPAL
VARIETIES, 1928-39
(Per Cent)

Season	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
California Navels									
1928-29	....	6.2	3.9	5.3	5.5	6.3	7.1	10.7	4.2
1929-30	....	....	3.0	3.7	2.8	4.8	2.1	7.2	....
1930-31	....	9.3	10.9	7.4	5.0	7.4	6.0	5.0	....
1931-32	....	7.0	3.2	4.8	4.9	4.5	1.8	4.2	....
1932-33	....	8.7	2.8	3.8	3.5	2.2	1.9	8.4	2.6
1933-34	....	....	7.6	4.9	1.9	2.4	3.4	4.3	....
1934-35	....	6.7	6.2	....	....	....	....	....	....
1935-36	....	3.2	3.4	2.8	7.0	2.7	1.2	5.4	8.7
1936-37	....	9.6	2.7	14.2	4.6	1.8	2.0	1.7	....
1937-38	....	8.4	4.7	3.2	3.6	7.1	5.4	4.4	5.6
1938-39	....	6.8	5.6	5.2	4.8	3.8	2.8	3.4	6.8
Florida Oranges (Standard Boxes)									
1928-29	26.6	21.3	9.3	8.6	3.1	11.3	11.7	9.9	8.1
1929-30	....	5.9	9.4	8.5	4.2	13.5	4.0	....	....
1930-31	14.9	14.5	8.0	10.1	6.8	5.2	6.8	4.1	4.4
1931-32	....	9.9	9.7	12.0	3.2	4.5	2.9	4.4	....
1932-33	....	8.5	9.3	8.0	7.6	4.2	3.6	6.5	15.1
1933-34	....	4.3	8.7	3.6	3.6	4.0	7.5	18.4	3.8
1934-35	7.0	11.7	8.2	....	....	....	....	....	....
1935-36	....	4.8	4.0	5.4	4.4	6.2	3.7	9.8	8.2
1936-37	7.2	4.5	10.0	8.6	6.6	3.4	4.6	3.0	8.7
1937-38	13.2	7.7	7.0	6.5	7.1	4.4	6.1	7.8	11.2
1938-39	6.1	6.6	6.8	3.7	4.4	4.8	7.4	4.1	4.9
Florida Oranges (2-Bu. Bruce Boxes)									
1935-36	....	....	....	....	....	10.1	4.8	13.0	4.5
1936-37	....	10.9	2.3	8.1	5.2	7.3	7.3	4.2	11.2
1937-38	10.6	8.2	8.4	11.2	5.1	3.3	6.2	9.6	9.6

TABLE 48 - Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
California Valencias												
1928	..	..	..	...	6.6	3.2	2.6	3.6	5.7	6.3	7.9	...
1929	..	..	..	...	15.5	6.8	8.0	5.4	5.5	7.2	11.2	8.1
1930	..	..	..	5.3	6.1	3.2	2.4	2.4	2.7	7.0	5.5	...
1931	..	..	..	...	6.2	7.8	4.5	5.7	4.0	4.8	12.3	...
1932	..	..	..	7.1	5.6	2.3	4.2	3.1	2.3	2.3	8.1	...
1933	..	..	..	...	...	3.2	3.1	2.0	3.7	4.1	8.8	7.9
1934	..	..	..	...	2.3	6.3	2.6	3.5	2.2	12.8	5.8	...
1935	..	..	..	...	...	...	...	...	...	...	...	...
1936	..	..	..	...	6.1	3.6	3.3	3.7	3.1	4.4	4.0	...
1937	..	..	..	...	5.5	2.4	6.3	2.4	2.0	7.7	4.2	...
1938	..	..	..	...	2.6	3.0	4.4	2.7	4.6	6.4	13.5	8.1
1939	..	..	..	...	0.6	4.4	4.9	2.4	3.1	17.9	6.0	8.9

TABLE 49

CALIFORNIA ORANGES: AUCTION SALES AND AVERAGE PRICES PER BOX,
BY SEASONS, AT TEN MARKETS, 1933-34 TO 1940-41^a

Season	New York		Philadelphia		Boston		Pittsburgh		Cleveland	
	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price
Nov. 11, 1933 - June 2, 1934 ..	2,809	\$2.79	645	\$2.71	1,383	\$2.89	603	\$2.87	601	\$2.91
Oct. 5, 1934 - May 31, 1935 ..	4,602	3.37	1,349	3.21	2,125	3.22	1,013	3.05	862	3.22
Sept. 6, 1935 - May 29, 1936 ..	4,922	3.37	1,337	3.21	2,029	3.28	890	3.16	898	3.24
Sept. 4, 1936 - June 4, 1937 ..	4,326	4.14	1,067	3.96	1,630	4.00	793	3.85	821	3.89
Sept. 24, 1937 - July 29, 1938 .	4,966	3.31	1,406	3.16	1,872	3.12	898	2.93	971	2.97
Sept. 9, 1938 - Aug. 18, 1939 .	6,477	2.97	1,838	2.79	2,279	2.87	1,092	2.71	1,076	2.74
Sept. 29, 1939 - Aug. 30, 1940 .	8,186	3.18	2,695	3.07	2,723	3.11	1,268	3.00	1,337	3.08
Oct. 11, 1940 - July 1, 1941 ..	6,450	3.27	2,236	3.19	2,633	3.17	1,345	3.04	1,219	3.12

TABLE 49 - Continued

Season	Chicago		St. Louis		Cincinnati		Detroit		Baltimore		Tot. Ten Cities	
	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price
Nov. 11, 1933 - June 2, 1934 .	1,846	\$3.01	757	\$2.81	247	\$2.65	826	\$2.84	....	.....	9,717 ^b	\$2.83
Oct. 5, 1934 - May 31, 1935 .	2,354	3.23	993	3.10	460	3.14	1,217	3.11	245	\$3.11	15,220	3.23
Sept. 6, 1935 - May 29, 1936 .	2,264	3.32	958	3.13	516	3.13	1,220	3.19	318	3.18	15,352	3.28
Sept. 4, 1936 - June 4, 1937 .	2,095	4.02	836	3.67	374	3.77	1,187	3.94	241	3.90	13,370	4.00
Sept. 24, 1937 - July 29, 1938	2,273	3.10	1,008	2.82	561	2.95	1,307	3.00	287	3.13	15,549	3.12
Sept. 9, 1938 - Aug. 18, 1939	2,614	2.85	1,201	2.64	613	2.65	1,520	2.78	429	2.76	19,139	2.85
Sept. 29, 1939 - Aug. 30, 1940	3,196	3.08	1,444	2.95	846	2.96	1,693	3.05	576	3.02	23,964	3.10
Oct. 11, 1940 - July 1, 1941 .	2,843	3.17	1,307	3.03	702	2.98	1,658	3.14	429	3.16	20,822	3.17

^aSource: Market News Service, United States Department of Agriculture.

^bTotal--nine markets.

TABLE 50

CALIFORNIA ORANGES: PRICE DIFFERENTIALS BETWEEN CHICAGO AND NINE COMPETING AUCTION MARKETS, BY SEASONS,
AS PERCENTAGES OF THE AVERAGE SEASONAL PRICES AT CHICAGO, 1933-34 TO 1940-41^a
(Differentials in Cents per Box)

Season	New York over Chicago		Chicago over Phil- adelphia		Chicago over Boston		Chicago over Pittsburgh		Chicago over Cleveland		Chicago over St. Louis		Chicago over Cincinnati		Chicago over Detroit		Chicago over Baltimore		Chicago over Ten Markets	
	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent	Dif.	Per Cent
1933-34	-22 ^b	7.31	30	9.97	12	3.99	14	4.65	10	3.32	20	6.64	36	11.96	17	5.65	..	....	18 ^c	5.98
1934-35	14	4.33	2	0.62	1	0.31	18	5.57	1	0.31	13	4.02	9	2.79	12	3.72	12	3.72	0	0.00
1935-36	5	1.51	11	3.31	4	1.20	16	4.79	8	2.41	19	5.72	19	5.72	13	3.92	14	4.19	4	1.20
1936-37	12	2.99	6	1.49	2	0.50	17	4.23	13	3.23	35	8.71	25	6.22	8	1.99	12	2.99	2	0.50
1937-38	21	6.77	-6 ^b	1.94	-2 ^b	0.65	17	5.48	13	4.19	28	9.03	15	4.84	10	3.23	-3 ^b	0.97	-2 ^b	0.65
1938-39	12	4.21	6	2.11	-2 ^b	0.70	14	4.91	11	3.86	21	7.37	20	7.02	7	2.46	9	3.16	0	0.00
1939-40	10	3.25	1	0.32	-3 ^b	0.97	8	2.60	0	0.00	13	4.22	12	3.90	3	0.97	6	1.95	-2 ^b	0.65
1940-41	10	3.15	-2 ^b	0.63	0	0.00	13	4.10	5	1.58	14	4.42	19	5.99	3	0.95	1	0.32	0	0.00

^aSource: Table 49.

^bDifferential in favor of lower priced market.

^cNine markets.

TABLE 51
CALIFORNIA ORANGES: RATIO OF AUCTION SALES AT NINE MARKETS TO AUCTION SALES AT CHICAGO, 1933-34 TO 1940-41*

Season	New York to Chicago	Philadelphia to Chicago	Boston to Chicago	Pittsburgh to Chicago	Cleveland to Chicago	St. Louis to Chicago	Cincinnati to Chicago	Detroit to Chicago	Baltimore to Chicago	Ten Markets to Chicago
1933-34	1.52	0.35	0.75	0.33	0.32	0.41	0.13	0.45	....	5.26
1934-35	1.96	0.57	0.90	0.43	0.37	0.42	0.20	0.52	0.10	6.47
1935-36	2.13	0.59	0.90	0.39	0.40	0.42	0.23	0.54	0.14	6.78
1936-36	2.06	0.51	0.78	0.38	0.39	0.40	0.18	0.57	0.12	6.38
1937-38	2.18	0.61	0.82	0.40	0.43	0.44	0.25	0.58	0.13	6.84
1938-39	2.48	0.70	0.87	0.42	0.41	0.46	0.23	0.58	0.16	7.32
1939-40	2.56	0.84	0.85	0.40	0.42	0.45	0.26	0.53	0.18	7.50
1940-41	2.27	0.79	0.93	0.47	0.43	0.46	0.25	0.58	0.15	7.32

*Source: Table 49.

TABLE 52

FLORIDA ORANGES: AUCTION SALES AND AVERAGE PRICES PER BOX,
BY SEASONS, AT TEN MARKETS, 1926-27 TO 1940-41^a

Season	New York		Philadelphia		Boston		Pittsburgh		Cleveland	
	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price
1926-27	4,534	\$4.16	2,042	\$3.68	328	\$3.73	723	\$3.42	432	\$3.46
1927-28	3,745	6.17	1,644	5.30	671	5.27	521	4.91	324	4.66
1928-29	2,545	3.45	3,193	3.61	1,449	2.63	616	2.79	550	2.62
1929-30	2,545	4.74	1,403	3.96	382	4.43	799	3.79	395	4.70
1930-31	2,545	3.53	3,164	3.30	1,673	3.37	352	3.14	707	3.27
1931-32	6,517	3.45	2,228	3.21	1,162	3.24	511	3.06	497	3.20
1932-33	3,638	2.43	2,668	2.45	1,413	2.53	573	2.35	553	2.40
1933-34	7,623	2.75	2,632	2.62	1,436	2.69	515	2.54	526	2.63
1934-35	5,243	2.61	2,720	2.47	1,419	2.56	511	2.44	578	2.53
1935-36	7,503	3.62	2,624	2.93	2,561	3.02	340	2.95	559	3.04
1936-37	7,112	3.23	3,164	3.15	1,657	3.28	423	3.12	624	3.21
1937-38	10,226	2.66	3,376	2.20	1,843	2.26	496	2.18	898	2.28
1938-39	12,140	2.16	4,219	1.99	2,132	2.16	694	2.11	1,091	2.20
1939-40	6,796	2.13	2,306	2.25	1,290	2.17	364	2.16	569	2.31
1940-41	10,069	2.37	3,320	2.26	1,385	2.45	426	2.31	647	2.44

TABLE 52 - Continued

Season	Chicago		St. Louis		Cincinnati		Detroit		Baltimore		Tot. Ten Cities	
	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price	No. Cars	Price
1926-27	667	\$3.60	330	\$3.22	529	\$3.50	...	.....	...	.....	10,205 ^b	\$3.81
1927-28	640	5.18	...	.....	410	4.88	...	.....	...	.....	8,158 ^c	5.62
1928-29	757	3.12	...	.....	582	2.79	...	.....	...	.....	13,787 ^c	3.15
1929-30	661	5.08	211	4.15	483	4.38	...	.....	...	.....	9,688 ^b	4.62
1930-31	1,112	3.34	356	3.05	723	3.14	302	\$3.21	...	.....	17,453 ^d	3.40
1931-32	776	3.25	174	2.96	447	3.14	179	3.26	...	.....	12,511 ^c	3.30
1932-33	821	2.55	273	2.30	611	2.30	256	2.46	...	.....	16,721 ^c	2.44
1933-34	894	2.67	266	2.46	495	2.47	267	2.69	112	\$2.86	14,766	2.70
1934-35	1,070	2.55	258	2.34	523	2.35	260	2.47	258	2.44	15,690	2.56
1935-36	678	3.15	249	2.72	523	2.67	271	3.08	210	2.82	14,780	3.00
1936-37	1,086	3.33	264	3.01	796	3.12	412	3.27	282	2.98	17,932	3.21
1937-38	1,394	2.39	413	2.05	1,161	2.16	590	2.26	362	1.96	20,666	2.24
1938-39	1,635	2.26	511	2.01	1,555	2.01	717	2.17	396	1.94	25,224	2.09
1939-40	1,012	2.41	318	2.09	1,031	2.05	393	2.25	173	2.23	16,836	2.35
1940-41	1,020	2.45	312	2.25	1,077	2.18	434	2.42	261	2.22	18,971	2.35

^aSource: Market News Service, United States Department of Agriculture.

^bTotal--eight markets. ^cTotal--seven markets. ^dTotal--nine markets.

TABLE 53

FLORIDA ORANGES: PRICE DIFFERENTIALS BETWEEN CHICAGO AND NINE COMPETING
AUCTION MARKETS, BY SEASONS, AS PERCENTAGES OF THE AVERAGE SEASONAL
PRICES AT CHICAGO, 1926-27 TO 1940-41^a
(Differentials in Cents per Box)

Season	New York over Chicago		Chicago over Philadelphia		Chicago over Boston		Chicago over Pittsburgh		Chicago over Cleveland	
	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent
1926-27	50	13.89	- 8 ^b	2.22	- 13 ^b	3.61	18	5.00	14	3.89
1927-28	99	19.11	- 12 ^b	2.32	- 9 ^b	1.74	27	5.21	30	5.79
1928-29	33	10.58	11	3.53	9	2.88	33	10.58	30	9.62
1929-30	- 14 ^b	2.76	110	21.65	65 ^b	12.80	129	25.39	38	7.48
1930-31	19	5.69	4	1.20	- 3 ^b	0.90	20	5.99	7	2.10
1931-32	15 ^b	4.62	4	1.23	1	0.31	19	5.85	5	1.54
1932-33	- 12 ^b	4.71	10	3.92	2 ^b	0.78	20	7.84	15	5.88
1933-34	8	3.00	5	1.87	- 2 ^b	0.75	13	4.87	4	1.50
1934-35	2	0.77	12	4.63	1	0.39	15	5.79	6	2.32
1935-36	- 13 ^b	4.13	22	6.98	13	4.13	20	6.35	11	3.49
1936-37	- 10 ^b	3.00	18	5.41	5	1.50	21	6.31	12	3.60
1937-38	- 13 ^b	5.44	19	7.95	15	6.28	21	8.79	11	4.60
1938-39	- 16 ^b	7.08	27	11.95	10 ^b	4.42	15	6.64	6	2.65
1939-40	2	0.83	16	6.64	- 6 ^b	2.49	25	10.37	10	4.15
1940-41	- 8 ^b	3.27	19	7.76	0	0.00	14	5.71	1	0.41

TABLE 53 - Continued

Season	Chicago over St. Louis		Chicago over Cincinnati		Chicago over Detroit		Chicago over Baltimore		Chicago over Nine Markets	
	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent	Differ.	Per Cent
1926-27	38	10.56	10	2.78	..	....	..	.....	- 21 ^{b, c}	5.83
1927-28	..	....	30	5.79	..	....	..	.....	- 44 ^{b, d}	8.49
1928-29	..	....	33	10.58	..	....	..	.....	- 3 ^c	0.96
1929-30	93	18.51	70	13.78	..	....	..	.....	- 46 ^{b, e}	9.06
1930-31	29	8.68	20	5.99	13 ^b	3.89	..	.....	- 6 ^{b, e}	1.77
1931-32	35	10.77	11	3.38	- 1	0.31	..	.....	- 5 ^{b, e}	1.54
1932-33	25	9.80	25	9.80	9	3.53	..	.....	- 11 ^e	4.31
1933-34	21	7.87	20	7.49	- 2 ^b	0.75	- 21 ^b	7.87	- 3 ^b	1.12
1934-35	25	9.65	24	9.27	12	4.67	15	5.79	3	1.16
1935-36	43	13.65	28	8.89	7	2.22	33	10.48	15	6.28
1936-37	32	9.61	21	6.31	6	1.80	35	10.51	12	3.60
1937-38	34	14.23	23	9.62	13	5.44	41	17.15	15	6.28
1938-39	25	11.06	25	11.06	9	3.98	32	14.16	17	7.51
1939-40	32	13.28	36	14.94	16	6.64	18	7.47	6	2.49
1940-41	20	8.16	27	11.02	3	1.22	23	9.39	10	4.09

^aSource: Table 52.^bDifferential in favor of the lower-priced market.^cTotal--eight markets.^dTotal--seven markets.^eTotal--nine markets.

TABLE 54

FLORIDA ORANGES: RATIO OF AUCTION SALES AT NINE MARKETS TO
AUCTION SALES AT CHICAGO, 1926-27 TO 1940-41^a

Season	New York to Chicago	Phila- delphia to Chicago	Boston to Chicago	Pitts- burgh to Chicago	Cleve- land to Chicago	St. Louis to Chicago	Cincin- nati to Chicago	Detroit to Chicago	Balti- more to Chicago	Ten Markets to Chicago
1926-27	6.60	2.97	1.35	1.05	0.63	0.48	0.77	....	....	14.85 ^b
1927-28	5.86	2.88	1.05	0.81	0.51	....	0.64	....	....	12.75 ^c
1928-29	8.51	4.22	1.91	1.08	0.73	....	0.77	....	....	18.21 ^c
1929-30	7.81	2.27	1.58	1.19	0.64	0.34	0.78	....	....	15.60 ^b
1930-31	7.59	2.85	1.51	0.86	0.64	0.32	0.66	0.28	....	15.70 ^d
1931-32	8.40	2.87	1.52	0.66	0.64	0.22	0.58	0.23	....	16.12 ^d
1932-33	10.03	3.11	1.54	0.63	0.60	0.30	0.67	0.28	....	18.16 ^d
1933-34	8.52	2.94	1.61	0.58	0.59	0.30	0.55	0.30	0.16	16.54
1934-35	7.70	2.54	1.33	0.48	0.54	0.24	0.52	0.26	0.24	14.85
1935-36	8.55	2.99	1.78	0.39	0.64	0.28	0.63	0.31	0.27	16.66
1936-37	8.44	2.93	1.53	0.40	0.76	0.24	0.66	0.38	0.26	16.60
1937-38	7.39	2.42	1.33	0.36	0.64	0.30	0.85	0.39	0.22	14.84
1938-39	7.59	2.47	1.30	0.42	0.67	0.31	0.95	0.44	0.24	15.39
1939-40	8.65	2.87	1.28	0.36	0.58	0.31	1.02	0.39	0.17	16.64
1940-41	9.89	3.25	1.36	0.42	0.63	0.31	1.06	0.43	0.26	18.60

^aSource: Table 52. ^bTotal for eight markets.

^cTotal for seven markets. ^dTotal for nine markets.

TABLE 55

CORRELATION BETWEEN MONTHLY AUCTION PRICES AND
PRICE CHANGES FOR CALIFORNIA VALENCIA AND
NAVEL ORANGES AT EACH OF TEN MARKETS,
AND THE AVERAGES FOR THE TEN MARKETS,
1927-1935*

Market	California Valencias		California Navels	
	Monthly Prices	Monthly Price Changes	Monthly Prices	Monthly Price Changes
Baltimore	0.983	0.767	0.984	0.895
Boston	.998	.976	.993	.919
Chicago	.996	.935	.988	.898
Cincinnati	.991	.921	.961	.752
Cleveland	.987	.908	.999	.983
Detroit	.995	.958	.994	.962
New York	.998	.981	.997	.976
Philadelphia	.997	.962	.994	.946
Pittsburgh	.994	.945	.996	.963
St. Louis	0.990	0.888	0.990	0.947

*Source: Kelsey B. Gardner, Terminal Fruit Auctions as Marketing Agencies for Farmers' Cooperatives, Farm Credit Administration Bulletin No. 29 (Washington: Government Printing Office, Nov. 1938), p. 37.

TABLE 56

CALIFORNIA ORANGES: FREQUENCY DISTRIBUTION OF WEEKLY PRICE DIFFERENTIALS BETWEEN CHICAGO
AND NINE COMPETING AUCTION MARKETS, 1933-34 TO 1940-41
(Cents per Box)

Differential	New York over Chicago		Chicago over Philadelphia		Chicago over Boston		Chicago over Pittsburgh		Chicago over Cleveland		Chicago over St. Louis		Chicago over Cincinnati		Chicago over Detroit		Chicago over Baltimore		Chicago over Ten Markets	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
71 and over	5	1.51	2	0.61	0	0.00	1	0.30	1	0.30	1	0.30	8	2.44	0	0.00	8	2.72	0	0.00
66-70	1	0.61	0	0.00	0	0.00	0	0.00	0	0.00	5	1.51	3	0.92	0	0.00	1	0.30	0	0.00
61-65	2	0.61	1	0.30	0	0.00	1	0.30	0	0.00	0	0.00	1	0.30	0	0.00	4	1.36	0	0.00
56-60	0	0.00	2	0.61	1	0.30	1	0.30	0	0.00	0	0.00	5	1.52	1	0.30	2	2.04	0	0.00
51-55	2	0.61	4	1.21	1	0.30	1	0.30	1	0.30	7	2.12	7	2.15	0	0.00	6	2.04	0	0.00
46-50	1	0.30	3	0.91	4	1.21	2	0.61	2	0.61	5	1.52	8	2.44	0	0.00	3	1.02	0	0.00
41-45	3	0.91	3	0.91	4	1.21	2	0.61	0	0.00	10	3.05	11	3.25	0	0.00	3	1.02	0	0.00
36-40	5	1.51	7	2.12	6	1.81	3	0.91	6	1.81	12	3.64	14	4.27	3	0.91	17	5.78	0	0.00
31-35	4	1.21	1	0.30	7	2.12	1	0.30	0	0.00	18	5.45	30	9.15	2	0.60	17	5.44	2	0.60
26-30	10	3.02	26	7.85	14	4.23	18	5.44	15	4.53	29	8.79	38	11.89	12	3.63	32	10.89	10	3.02
21-25	13	3.93	26	7.85	20	6.04	34	10.27	18	5.44	35	10.61	39	11.89	17	5.11	26	8.85	14	4.23
16-20	18	5.44	35	10.27	28	8.46	42	12.69	33	9.97	48	14.55	31	9.45	26	7.85	17	5.44	12	3.63
11-15	35	10.57	44	13.29	26	7.86	38	11.78	35	10.57	44	13.33	32	9.75	17	5.11	29	8.87	14	4.23
6-10	43	12.99	36	10.88	31	9.37	38	11.48	40	12.08	29	8.79	20	6.04	13	3.93	23	6.95	12	3.63
1-5	43	12.99	43	12.99	36	10.88	44	13.29	41	12.39	40	12.12	29	8.84	46	13.90	24	8.51	48	14.50
0	6	1.81	5	1.51	9	2.72	3	0.91	8	2.42	5	1.51	1	0.30	5	1.51	3	1.02	9	2.72
1-5	30	9.06	20	6.04	44	13.29	26	7.86	48	14.50	17	5.15	15	4.57	53	16.01	22	6.95	46	13.90
6-10	31	9.37	22	6.65	32	9.67	14	4.23	23	6.95	19	5.73	11	3.33	53	16.01	20	6.95	46	13.90
11-15	29	8.79	31	9.37	36	10.88	16	4.81	20	6.04	10	3.03	6	1.81	19	5.73	28	8.51	42	13.29
16-20	20	6.04	16	4.81	16	4.81	10	3.03	18	5.44	2	0.61	2	0.61	8	2.42	3	1.02	7	2.12
21-25	11	3.33	7	2.12	7	2.12	5	1.51	14	4.23	2	0.61	5	1.52	4	1.21	2	0.68	3	0.91
26-30	9	2.72	4	1.21	4	1.21	4	1.21	4	1.21	0	0.00	0	0.00	4	1.21	4	1.36	2	0.60
31-35	2	0.61	3	0.91	3	0.91	1	0.30	4	1.21	0	0.00	0	0.00	2	0.60	1	0.34	1	0.30
36-40	2	0.61	2	0.61	1	0.30	0	0.00	2	0.61	0	0.00	0	0.00	2	0.60	1	0.34	2	0.60
41-45	0	0.00	2	0.61	1	0.30	0	0.00	2	0.61	1	0.30	1	0.30	0	0.00	1	0.34	3	0.91
46-50	1	0.30	1	0.30	0	0.00	0	0.00	1	0.30	0	0.00	0	0.00	0	0.00	1	0.34	0	0.00
51-55	0	0.00	1	0.30	2	0.61	1	0.30	2	0.61	0	0.00	0	0.00	1	0.30	2	0.68	0	0.00
56-60	0	0.00	1	0.30	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.34	0	0.00
61-65	0	0.00	1	0.30	0	0.00	0	0.00	0	0.00	1	0.30	0	0.00	1	0.30	1	0.34	0	0.00
66-70	0	0.00	1	0.30	0	0.00	0	0.00	0	0.00	0	0.00	1	0.31	0	0.00	1	0.34	1	0.30
71 and over	0	0.00	0	0.00	3	0.91	1	0.30	0	0.00	0	0.00	0	0.00	1	0.30	0	0.00	0	0.00
Total	331	100.00	331	100.00	331	100.00	331	100.00	331	100.00	330	100.00	328	100.00	331	100.00	294	100.00	331	100.00

TABLE 57

FLORIDA ORANGES: FREQUENCY DISTRIBUTION OF WEEKLY PRICE DIFFERENTIALS BETWEEN CHICAGO
AND NINE COMPETING AUCTION MARKETS, 1933-34 TO 1940-41
(Cents per Box)

Differential	Chicago over New York		Chicago over Philadelphia		Chicago over Boston		Chicago over Pittsburgh		Chicago over Cleveland		Chicago over St. Louis		Chicago over Cincinnati		Chicago over Detroit		Chicago over Baltimore		Chicago over Ten Market Average	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
71 and over	3	1.02	6	2.05	3	1.04	4	1.41	1	0.35	23	8.30	7	2.43	1	0.35	16	6.32	3	1.02
66-70	1	0.34	4	1.38	1	0.35	3	1.06	0	0.00	2	0.72	1	0.35	1	0.35	5	1.98	0	0.00
61-65	2	0.68	2	0.68	0	0.00	0	0.00	0	0.00	2	0.72	2	0.69	1	0.35	6	2.37	0	0.00
56-60	1	0.34	2	0.68	1	0.35	3	1.06	0	0.00	6	2.17	4	1.39	1	0.35	12	4.74	2	0.68
51-55	4	1.36	8	2.73	4	1.39	5	1.76	2	0.70	15	5.42	10	3.67	2	0.70	15	5.93	3	1.02
46-50	8	2.73	10	3.41	7	2.47	7	2.47	6	2.09	15	5.42	16	5.68	4	1.40	18	7.11	3	1.02
41-45	11	3.73	14	4.78	9	3.17	9	3.17	6	2.09	29	10.47	21	7.29	7	2.43	24	8.49	8	2.03
36-40	8	2.73	14	4.78	7	2.47	7	2.47	3	1.04	29	10.47	19	6.80	5	1.76	16	6.32	10	3.39
31-35	20	6.78	26	8.87	16	5.56	20	7.04	11	3.83	22	7.94	30	10.47	17	5.97	19	7.91	12	3.39
26-30	27	9.15	39	13.31	19	6.94	33	11.62	17	5.92	18	6.50	49	17.01	24	8.42	20	7.51	26	8.80
21-25	30	10.17	42	14.33	20	6.94	33	11.62	12	4.18	21	7.58	29	10.07	16	5.97	16	6.32	43	14.57
16-20	27	9.15	39	13.31	27	9.37	30	9.15	37	12.89	27	9.78	49	17.01	24	8.42	22	8.70	36	12.20
11-15	26	8.87	26	8.87	27	9.37	30	9.15	35	12.89	27	9.78	22	7.64	34	11.93	17	6.72	45	15.25
6-10	24	8.14	15	5.22	29	10.07	40	14.08	35	12.89	27	9.78	22	7.64	34	11.93	17	6.72	21	7.12
1-5	18	6.10	17	5.80	25	8.68	20	7.04	38	13.24	13	4.69	15	5.21	35	12.28	18	6.16	23	7.80
0	0	0.00	2	0.68	9	3.13	3	1.06	8	2.79	1	0.36	3	1.04	4	1.40	4	1.58	3	1.02
1-5	16	5.42	13	4.44	23	7.99	13	4.58	28	9.76	10	3.61	11	3.82	20	7.02	8	3.16	18	6.10
6-10	10	3.39	7	2.39	17	5.90	12	4.23	29	10.10	10	3.61	3	1.04	23	8.07	2	0.79	12	4.07
11-15	16	5.42	9	3.07	13	4.51	12	4.23	12	4.18	4	1.44	3	1.04	17	5.97	2	0.79	7	2.37
16-20	4	1.36	2	0.68	13	4.51	9	3.17	9	3.17	1	0.36	3	1.04	12	4.21	1	0.79	2	0.68
21-25	8	2.73	4	1.36	3	1.04	2	0.70	5	1.74	1	0.36	3	1.04	7	2.46	2	0.79	2	0.68
26-30	7	2.37	2	0.68	3	1.04	0	0.00	3	1.04	0	0.00	2	0.69	4	1.40	0	0.00	1	0.34
31-35	2	0.68	1	0.34	3	1.04	1	0.35	2	0.70	0	0.00	2	0.69	7	2.46	0	0.00	1	0.34
36-40	1	0.34	0	0.00	4	1.39	0	0.00	4	1.39	1	0.36	1	0.35	4	1.40	0	0.00	1	0.34
41-45	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	0.35	0	0.00	0	0.00
46-50	1	0.34	1	0.34	1	0.35	1	0.35	1	0.35	0	0.00	0	0.00	0	0.00	1	0.40	0	0.00
51-55	0	0.00	1	0.34	0	0.00	0	0.00	1	0.35	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
56-60	0	0.00	1	0.34	0	0.00	0	0.00	1	0.35	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
61-65	0	0.00	0	0.00	0	0.00	0	0.00	1	0.35	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
66-70	1	0.34	0	0.00	0	0.00	1	0.35	1	0.35	0	0.00	1	0.35	0	0.00	0	0.00	1	0.34
71 and over	5	1.69	1	0.34	1	0.35	2	0.70	2	0.70	0	0.00	1	0.35	3	1.03	0	0.00	1	0.34
Total	295	100.00	293	100.00	288	100.00	284	100.00	287	100.00	277	100.00	288	100.00	285	100.00	253	100.00	295	100.00

TABLE 58

INDEX NUMBERS OF FREIGHT RATES ON CITRUS FRUITS FROM EIGHTEEN CALIFORNIA
AND FLORIDA SHIPPING POINTS TO NINE CONSUMING MARKETS,
1900-01 TO 1939-40^a
(Jan. 1, 1910 - Dec. 31, 1914 = 100)

Season ^b	California	Florida	Difference ^c	Season ^b	California	Florida	Difference ^c
1900-01	109	109.9 ^d	+ 0.9	1920-21	167	164.5	- 2.5
1901-02	109	109.9	+ 0.9	1921-22	153	153.6	+ 0.6
1902-03	109	108.1	- 0.9	1922-23	150	148.1	- 1.9
1903-04	109	107.8	- 1.2	1923-24	137	148.1	+ 11.1
1904-05	109	108.3	- 0.7	1924-25	136	148.1	+ 12.1
1905-06	109	108.3	- 0.7	1925-26	136	148.1	+ 12.1
1906-07	103	109.0	+ 6.0	1926-27	136	148.1	+ 12.1
1907-08	100	109.1	+ 9.1	1927-28	136	148.1	+ 12.1
1908-09	100	104.8	+ 4.8	1928-29	135	145.2	+ 10.2
1909-10	100	103.3	+ 3.3	1929-30	135	144.5	+ 9.5
1910-11	100	101.5	+ 1.5	1930-31	135	144.5	+ 9.5
1911-12	100	101.1	+ 1.1	1931-32	136	138.9	+ 2.9
1912-13	100	98.2	- 1.8	1932-33	130	139.5	+ 9.5
1913-14	100	97.5	- 2.5	1933-34	123	136.0	+ 13.0
1914-15	100	98.5	- 1.5	1934-35	123	126.1	+ 3.1
1915-16	100	98.5	- 1.5	1935-36	123	108.7	- 14.3
1916-17	100	98.6	- 1.4	1936-37	117	97.4	- 19.6
1917-18	109	103.5	- 5.5	1937-38	121	97.7	- 23.3
1918-19	125	123.9	- 1.1	1938-39	123 ^e	98.3	- 24.7
1919-20	132	124.7	- 7.3	1939-40	123 ^e	97.8	- 25.2

^aSource: College of Agriculture, University of Florida.

^bSeasons: Florida, September through August; California, November through October.

^c(+) in favor of California; (-) in favor of Florida.

^dJanuary through August. ^eNovember through August.

TABLE 59

FLORIDA ORANGES: RELATIONSHIP BETWEEN PRICE DIFFERENTIALS AND RAIL FREIGHT RATE DIFFERENTIALS,
CHICAGO AND THREE COMPETING AUCTION MARKETS, 1926-27 TO 1940-41^a
(Cents Per Box)

Season	New York over Chicago			Chicago over Boston			Chicago over Philadelphia		
	Price Differ.	Freight Rate Differ. ^b	Difference	Price Differ.	Freight Rate Differ.	Difference	Price Differ.	Freight Rate Differ.	Difference
1926-27	50.0	10.3	60.3	13.0 ^c	2.9	15.9	8.0 ^c	13.3	21.3
1927-28	99.0	10.3	109.3	9.0 ^c	2.9	11.9	12.0 ^c	13.3	25.3
1928-29	33.0 ^c	4.9	37.9	9.0	4.2 ^c	13.2	11.0	8.7	2.3
1929-30	14.0 ^c	3.6	10.4	65.0 ^c	5.9 ^c	70.9	110.0	7.6	102.4
1930-31	19.0	3.6	22.6	3.0 ^c	5.9 ^c	2.9	4.0	7.6	3.6
1931-32	15.0 ^c	9.1	24.1	1.0	0.1 ^c	1.1	4.0	11.7	7.7
1932-33	12.0 ^c	7.4	4.6	2.0	0.2 ^c	2.2	10.0	10.1	0.1
1933-34	8.0	1.6	9.6	2.0 ^c	7.4 ^c	5.4	5.0	3.8	1.2
1934-35	2.0	10.1	12.1	1.0	1.0	0.0	12.0	11.5	0.5
1935-36	13.0 ^c	22.2	9.2	13.0	11.0	2.0	22.0	22.7	0.7
1936-37	10.0 ^c	23.1	13.1	5.0	11.9	6.9	18.0	23.1	5.1
1937-38	13.0 ^c	22.8	9.8	15.0	11.6	3.4	19.0	22.8	3.8
1938-39	16.0 ^c	25.2	9.2	10.0	13.0	3.0	27.0	25.2	1.8
1939-40	2.0	25.3	27.3	6.0 ^c	13.0	19.0	16.0	25.2	9.2
1940-41	8.0 ^c	....	.....	0.0	....	....	19.0	....	.....

^aSources: Price Differentials, Table 53: Freight Rate Differentials, College of Agriculture, University of Florida, Gainesville, Florida.

^bFreight Rate Differentials, Chicago over New York.

^cNegative Differentials.

TABLE 60

ALL ORANGES: MONTHLY AUCTION SALES (IN BOXES) AND WEIGHTED AVERAGE MONTHLY AUCTION PRICES PER BOX AT CHICAGO, 1928-1940

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total or Average
Sales (in Boxes)													
1928	193,536	181,910	216,932	208,570	182,979	126,198	105,316	122,703	100,968	119,947	192,600	213,648	1,965,307
1929	228,473	221,467	210,328	294,843	304,650	262,392	225,278	185,566	150,799	184,454	177,408	210,160	2,685,818
1930	208,062	191,741	198,105	231,875	159,001	151,228	133,320	104,826	98,598	116,546	167,944	235,069	1,996,314
1931	199,452	189,724	250,755	226,012	227,384	197,687	188,674	150,490	144,008	143,266	189,397	205,713	2,312,562
1932	174,959	196,772	214,746	215,591	204,564	161,641	142,188	112,242	114,353	133,847	146,757	172,533	2,020,193
1933	135,832	148,779	155,848	163,704	184,079	190,568	131,056	118,245	109,211	139,801	171,395	154,549	1,803,067
1934	180,307	152,823	191,697	204,805	189,784	140,044	134,282	109,038	108,133	128,960	183,468	186,764	1,910,105
1935	215,730	197,114	178,191	211,007	222,472	178,628	150,876	129,349	125,589	161,124	151,554	169,111	2,090,745
1936	119,498	118,174	179,534	172,670	173,541	158,336	137,683	124,984	121,974	154,938	152,100	156,925	1,800,357
1937	132,030	136,699	150,948	184,766	189,170	156,595	105,822	110,420	111,752	140,314	166,174	164,571	1,749,261
1938	146,251	168,484	193,106	175,236	223,552	174,551	126,524	111,725	139,913	192,225	162,834	157,012	2,001,503
1939	167,955	192,492	175,492	165,448	201,694	199,962	152,775	124,599	132,975	205,510	167,020	170,500	2,056,322
1940	183,622	187,905	189,478	196,893	206,074	171,036	161,134	138,069	144,238	157,277	155,566	170,340	2,061,272
Price per Box													
1928	\$4.67	\$5.37	\$5.55	\$5.98	\$7.24	\$6.40	\$7.11	\$7.50	\$7.05	\$7.05	\$5.05	\$4.47	\$5.93
1929	4.17	3.59	3.33	3.71	3.40	3.94	3.80	4.44	4.38	4.57	4.65	5.26	4.03
1930	4.75	4.99	5.94	6.34	7.25	7.05	7.09	7.17	7.57	7.54	4.49	3.30	5.84
1931	3.22	3.16	3.67	3.41	3.78	3.61	3.96	3.55	3.78	4.23	3.48	3.04	3.56
1932	2.75	3.32	3.10	3.20	3.38	3.10	3.35	2.96	3.25	3.34	3.42	2.79	3.16
1933	2.78	2.61	2.50	2.41	2.67	2.82	3.09	3.15	3.34	3.30	2.73	2.52	2.80
1934	2.75	2.64	2.81	2.81	3.52	4.35	3.97	3.99	3.84	4.40	3.33	2.56	3.31
1935	2.69	2.77	2.97	3.27	2.98	2.93	3.35	3.32	3.46	3.43	3.42	3.23	3.12
1936	2.98	3.19	3.08	3.13	3.56	3.71	4.07	3.96	4.41	4.10	3.44	2.79	3.51
1937	3.43	3.73	3.89	4.00	3.95	4.37	5.16	5.29	5.41	4.56	3.09	2.54	4.02
1938	2.23	2.11	2.29	2.31	2.60	2.67	3.06	3.15	3.07	2.63	2.57	2.51	2.60
1939	2.27	2.23	2.39	2.56	2.69	2.94	2.80	3.15	3.78	3.07	2.60	2.36	2.71
1940	2.35	2.68	2.64	3.19	3.27	3.57	3.07	3.24	3.10	3.34	3.24	2.76	3.02

TABLE 61
CALIFORNIA ORANGES:^a A WEIGHTED AVERAGE MONTHLY AUCTION PRICES AT CHICAGO, BY VARIETIES, 1928-29 TO 1940-41

Year	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Navels										
1928-29	\$5.43	\$4.73	\$4.50	\$3.75	\$3.37	\$3.92	\$3.47	\$3.95	.....	\$4.02
1929-30	6.18	5.75	5.08	5.19	6.25	6.31	6.82	.....	.....	5.79
1930-31	5.34	3.49	3.45	3.21	3.67	3.31	4.14	.....	.....	3.64
1931-32	3.63	3.10	2.71	3.39	3.00	3.09	3.37	.....	.....	3.13
1932-33	3.25	2.78	2.84	2.66	2.55	2.43	2.87	3.07	.....	2.73
1933-34	2.80	3.22	2.97	2.77	2.83	2.81	3.41	3.22	.....	2.98
1934-35	3.26	2.68	2.84	2.90	3.14	3.33	2.76	.....	.....	2.97
1935-36	3.80	3.44	3.04	3.18	3.10	3.14	3.48	3.22	.....	3.23
1936-37	3.59	2.91	3.74	3.98	3.96	4.26	4.72	.....	.....	3.78
1937-38	3.02	2.65	2.36	2.74	2.55	2.64	2.98	2.40	.....	2.67
1938-39	2.84	2.93	2.57	2.47	2.65	2.74	2.86	3.18	.....	2.72
1939-40	2.59	2.60	2.73	2.85	2.67	3.15	3.10	2.93 ^b	.....	2.86
1940-41	3.19	3.05	3.14	2.92	3.02	3.01	3.00	.....	.....	3.03 ^c
Miscellaneous										
1928-29	.....	.....	.....	.....	.....	.....	.....	.....	\$2.51	\$2.51
1929-30	.....	.....	.....	\$5.42	\$6.78	\$6.63	\$7.00	.....	.....	6.66
1930-31	.....	.....	.....	.....	2.90	2.73	3.43	.....	.....	2.97
1931-32	.....	.....	.....	.....	2.51	2.77	3.02	.....	.....	2.71
1932-33	.....	.....	.....	.....	2.28	2.07	2.40	\$2.44	.....	2.40
1933-34	.....	.....	.....	.....	2.95	2.27	3.27	.....	.....	3.00
1934-35	.....	.....	.....	.....	3.20	3.34	2.98	.....	.....	3.28
1935-36	.....	\$3.28	.....	.....	2.62	2.75	3.41	.....	.....	3.16
1936-37	\$2.23	2.21	\$1.62	.....	.....	4.14	3.80	2.85	.....	3.70
1937-38	2.47	.....	1.96	2.25	.....	2.39	2.56	2.37	.....	2.34
1938-39	.....	.....	.....	2.23	.....	2.18	2.32	2.33	.....	2.26
1939-40	.....	2.54	2.80	3.02	2.98	3.50	3.20	.....	.....	3.18
1940-41	2.95	2.70	2.74	2.83	2.95	2.68	2.51	 ^b	.....	2.68 ^c
Miscellaneous										

^a Includes Arizona orange prices.

^b Not available at time of tabulation.

^c Excludes June, 1941.

TABLE 61--Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
Valencias													
1928	.....	.....	\$5.08	\$5.46	\$7.22	\$6.40	\$7.41	\$7.11	\$7.50	\$7.15	\$6.90	.....	\$7.08
1929	.....	.....	.....	.....	3.65	4.10	3.82	4.44	4.38	4.57	4.64	\$4.60	4.29
1930	.....	.....	.....	5.75	7.39	7.05	7.09	7.17	7.57	8.26	6.85	.....	7.31
1931	.....	.....	.....	.....	3.33	3.57	3.96	3.55	3.78	4.26	3.53	3.23	3.75
1932	.....	.....	.....	2.70	3.29	3.10	3.35	2.96	3.25	3.34	3.56	3.19	3.24
1933	.....	.....	.....	.....	.....	2.86	3.10	3.15	3.34	3.31	2.81	2.13	3.01
1934	\$2.24	.....	2.81	.....	3.88	4.40	3.97	3.99	3.84	4.56	4.40	.....	4.14
1935	.....	.....	.....	.....	3.40	3.05	3.35	3.32	3.46	3.45	3.50	3.22	3.34
1936	.....	.....	.....	.....	3.45	3.75	4.07	3.96	4.41	4.29	4.15	.....	4.09
1937	.....	.....	.....	.....	4.24	4.71	5.17	5.29	5.41	5.03	4.30	.....	4.97
1938	.....	.....	2.23	2.01	2.65	2.78	3.08	3.15	3.07	2.72	2.94	3.39	2.94
1939	.....	.....	.....	.....	3.02	3.19	2.84	3.15	3.78	3.21	2.95	3.05	3.20
1940	3.04	\$2.46	.....	3.61	3.54	3.59	3.07	3.24	3.10	3.38	3.78	4.34	3.35
All Varieties													
1928	\$4.63	\$5.44	\$5.52	\$5.99	\$7.22	\$6.40	\$7.41	\$7.11	\$7.50	\$7.15	\$5.96	\$4.73	\$6.13.
1929	4.50	3.75	3.37	3.92	3.49	4.08	3.82	4.44	4.38	4.57	4.69	5.53	4.15
1930	5.11	5.19	6.27	6.27	7.26	7.05	7.09	7.17	7.57	8.26	5.70	3.51	6.21
1931	3.44	3.21	3.66	3.30	3.78	3.57	3.96	3.55	3.78	4.26	3.57	3.10	3.60
1932	2.72	3.39	2.99	3.05	3.33	3.10	3.35	2.96	3.25	3.34	3.48	2.80	3.15
1933	2.84	2.66	2.55	2.43	2.87	2.88	3.10	3.15	3.34	3.31	2.81	2.58	2.89
1934	2.93	2.77	2.82	2.80	3.53	4.36	3.97	3.99	3.84	4.56	3.65	2.68	3.50
1935	2.84	2.90	3.14	3.33	3.04	3.05	3.35	3.32	3.46	3.45	3.52	3.31	3.22
1936	3.04	3.18	3.09	3.14	3.47	3.71	4.07	3.96	4.41	4.29	3.84	2.89	3.63
1937	3.73	3.98	3.96	4.25	4.38	4.71	5.17	5.29	5.41	5.03	3.73	2.65	4.41
1938	2.36	2.74	2.54	2.63	2.87	2.77	3.08	3.15	3.07	2.72	2.93	2.97	2.84
1939	2.57	2.47	2.65	2.74	2.87	3.18	2.84	3.15	3.78	3.21	2.88	2.63	2.97
1940	2.73	2.85	2.68	3.19	3.24	3.57	3.07	3.24	3.10	3.38	3.67	3.07	3.17

TABLE 62

FLORIDA ORANGES: WEIGHTED AVERAGE MONTHLY AUCTION PRICES AT CHICAGO, BY PRINCIPAL VARIETIES, 1928-29 TO 1940-41

Year	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Average
Indian Rivers											
1930-31	\$1.36	\$3.57	\$2.92	\$2.89	\$3.35	\$3.81	\$3.86	\$3.77	\$4.20	.....	\$3.41
1931-32	.....	3.60	3.23	3.17	3.40	3.97	4.07	4.06	.....	.....	3.45
1932-33	.....	3.52	3.03	2.88	3.16	2.85	2.62	2.57	2.96	.....	2.86
1933-34	.....	.....	2.81	2.61	2.81	2.95	3.10	2.99	.....	.....	2.82
1934-35	.....	3.14	1.99	2.42	3.05	3.44	3.59	2.99	.....	.....	3.18
1935-36	.....	.....	3.19	3.28	3.67	3.46	3.38	4.17	.....	.....	3.43
1936-37	.....	.....	2.96	3.33	4.37	3.58	.....	.....	.....	.....	3.44
1937-38	.....	.....	.....	2.58	.....	2.57	.....	.....	.....	.....	2.58
1938-39	.....	.....	.....	2.47	2.24	2.74	.....	.....	.....	.....	2.44
1939-40	.....	.....	1.76	.....	.....	.....	.....	.....	.....	.....	1.76
1940-41	.....	.....	.....	2.96	2.49	2.50	.....	.....	.....	.....	2.52
Pineapples											
1930-31	\$4.67	\$2.79	\$2.64	\$2.71	\$2.96	\$3.69	.....	.....	.....	.....	\$2.86
1931-32	.....	2.80	2.81	2.82	3.17	3.52	.....	.....	.....	.....	3.03
1932-33	.....	3.02	2.78	2.71	2.49	2.44	\$2.34	.....	.....	.....	2.63
1933-34	.....	2.46	2.35	2.55	2.49	2.94	.....	.....	.....	.....	2.51
1934-35	.....	2.49	2.39	2.40	2.45	2.62	3.34	.....	.....	.....	2.43
1935-36	3.30	3.10	3.00	2.86	3.20	2.90	.....	.....	.....	.....	3.00
1936-37	2.99	2.72	2.53	3.05	3.29	3.63	.....	.....	.....	.....	2.98
1937-38	2.93	2.67	2.44	2.16	2.06	1.95	2.21	.....	.....	.....	2.31
1938-39	.....	1.99	1.94	1.98	1.97	2.02	2.15	\$1.92	\$2.35	.....	1.98
1939-40	.....	1.88	1.88	1.95	2.29	2.67	2.94	2.63	.....	.....	2.00
1940-41	.....	2.24	2.04	2.25	2.40	2.44	.....	.....	.....	.....	2.28
Round Oranges											
1930-31	\$4.57	\$2.99	\$2.31	\$2.56	\$2.92	\$3.63	\$3.21	.....	.....	.....	\$3.07
1931-32	2.62	3.00	2.64	2.77	3.14	3.30	.....	.....	.....	.....	2.96
1932-33	.....	2.98	2.68	2.50	2.32	2.29	2.20	.....	.....	.....	2.47
1933-34	1.74	2.39	2.10	2.33	2.39	2.90	.....	.....	.....	.....	2.42
1934-35	3.06	2.79	2.09	2.24	2.42	2.48	2.29	\$2.60	.....	.....	2.52

TABLE 62--Continued

Year	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Average
Round Oranges											
1935-36	\$2.98	\$3.05	\$3.02	\$2.90	\$3.24	\$2.93	\$2.68	.....	.....	.....	\$3.03
1936-37	3.35	2.65	2.41	2.93	3.29	3.97	.....	.....	.....	.....	3.00
1937-38	3.64	2.74	2.27	2.02	2.04	1.98	.....	.....	.....	.....	2.70
1938-39	2.23	1.95	2.03	2.01	2.03	2.12	2.53	\$2.76	\$2.82	\$2.91	2.29
1939-40	2.50	1.95	1.95	1.87	2.13	.....	.....	.....	.....	.....	2.15
1940-41	2.39	2.33	1.97	2.30	2.34	2.46	.....	.....	.....	.....	2.26
Valencias											
1930-31	.....	.....	.....	.....	.....	\$3.70	\$3.79	\$3.77	\$3.78	\$3.26	\$3.77
1931-32	.....	.....	.....	.....	\$3.33	3.61	3.77	3.60	3.29	.....	3.66
1932-33	.....	.....	.....	.....	.....	2.50	2.36	2.23	2.50	2.79	2.36
1933-34	.....	.....	.....	.....	2.38	2.73	2.82	3.48	4.18	.....	3.00
1934-35	.....	.....	.....	.....	1.96	2.56	3.05	2.68	2.26	.....	2.68
1935-36	.....	.....	.....	.....	2.89	3.07	3.16	3.82	3.71	.....	3.39
1936-37	.....	.....	.....	.....	.....	3.61	3.64	3.37	3.52	4.03	3.52
1937-38	.....	.....	.....	.....	1.96	1.92	1.93	2.19	2.42	2.49	2.10
1938-39	.....	.....	.....	.....	2.05	2.17	2.31	2.42	2.55	2.61	2.39
1939-40	.....	.....	.....	.....	2.53	2.57	3.20	3.42	3.38	.....	3.00
1940-41	.....	.....	.....	.....	.....	2.65	2.55	2.63	2.71	.....	2.62
All Varieties											
1928-29	\$3.40	\$3.11	\$3.08	\$2.99	\$3.00	\$3.12	\$2.78	\$2.83	\$2.73	\$2.33	\$2.96
1929-30	.....	4.15	4.18	4.03	4.41	5.15	6.76	5.84	.....	.....	4.72
1930-31	4.58	2.99	2.49	2.67	3.02	3.70	3.78	3.77	3.80	3.26	3.33
1931-32	2.62	2.99	2.78	2.84	3.20	3.52	3.79	3.61	3.29	.....	3.24
1932-33	.....	3.01	2.78	2.66	2.49	2.42	2.36	2.27	2.56	2.79	2.52
1933-34	1.74	2.43	2.32	2.52	2.46	2.79	2.83	3.47	4.18	.....	2.68
1934-35	3.06	2.71	2.29	2.35	2.48	2.53	3.06	2.69	2.26	.....	2.56
1935-36	2.99	3.07	3.00	2.88	3.20	3.04	3.11	3.82	3.71	.....	3.16
1936-37	3.31	2.68	2.48	3.02	3.30	3.68	3.64	3.37	3.52	4.03	3.25
1937-38	3.57	2.71	2.38	2.12	2.07	1.95	1.93	2.19	2.42	2.49	2.31
1938-39	2.23	1.97	1.97	2.01	2.02	2.17	2.33	2.49	2.61	2.67	2.25
1939-40	2.50	1.94	1.90	1.97	2.30	2.58	3.20	3.42	3.38	.....	2.39
1940-41	2.39	2.31	2.01	2.27	2.39	2.57	2.55	2.63	2.71	.....	2.44

